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Outline of a Philosophical Anthropology

Regulators of Freedom: Reciprocity and Self-organization

Translation based upon
the 3rd, completely revised German edition

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Outline of a Philosophical Anthropology.
Regulators of Freedom:
Reciprocity and Self-organization.

Translated from the enlarged and corrected 3rd German Edition
("Skizzen zu einer philosophischen Anthropologie.
Regulatoren der Freiheit: Reziprozität und Selbstorganisation.")

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PREFACE

1. On the meaning of 'philosophical anthropology'

This book is not a systematic introduction into that sub-field of philosophy which is called 'Philosophical Anthropology'. The word 'anthropology' can refer to the science of man, but it can also refer to a concept or program of human existence, from an individual standpoint and in self-determination, for example. Such a program can be called 'philosophical' in the sense of reflective thought, analytical arguments, and reasoned generalizable proceeding. In accordance with such an explication of meaning, philosophical anthropology can be viewed as a reflection between practical philosophy and an empirical program of the sciences of man. Depending upon the emphasis placed, the philosophical problems of empirical science may be highlighted (e.g., explanation, systems description as the clarification of structure or as a basis of comprehension; concept formation, etc.; Chapters A-C) or philosophical thought in the sense of efforts for conceptual clarification and the uncovering of consequences for one's own action as well as developing a concept of existence of one's own (Chapters D-I).

2. On the concept

The "Outline of a philosophical anthropology" is the *draft* of *one* concept besides many possible others. The *concept* underlying my outline of a philosophical anthropology could be called "*regulators of freedom*". 'Freedom' is defined as possibility (a margin of space for creating) and 'free will' is defined as a mechanism of forming an intention, of planning, and of a goal-conscious decision to act. These regulators of freedom and free will consist of *reciprocity and creating structure (self-organization as procedure)* and serve their own maintenance (cf. Vogel / Angermann I:55). See D.22. *Freedom and free will* are dealt with in Chapter D. *Reciprocity* [explications cf. B.6(2), E.22(4(1-3)), F.1(3), F.2] and *self-organization* [explication in E.20/21; cf. especially E.I, II, IV, V, VII] are dealt with in Chapters D-F and H-I; Chapter G is the answer to the destruction thereof. Chapters A-C contain anthropological background knowledge. The "outline" presented here may help to organize existence and identity, individually as well as subjectively, in one's own practical life. The concept is systemic, procedural, and regulative, and takes into account superordinated goals (E.31-33). Existential themes such as disease, guilt, victimization, distress and death are only referred to briefly (G; E.14).

3. In detail

Chapter D [Freedom and free will] is at the center of attention. The concepts of freedom and of free will are *subjective* (D.0.2; D.10; D.11). Their

conditions of application, particularly, include a subjective *buffer,* i.e. leisure time or idleness, a sharply reduced level of stress [D.10; E.27], and degrees of freedom or margins even in contexts of action, work, and other activities of life [D.7-9; D.11; E.5]. At the center of attention of Chapter E [Personality system], we find *"self-organization" as procedures and as capability.* Chapter H [Creativity & development of problems] *deepens* "self-organization" in the sense of stimulating fantasy, creating structure and the development of problems. In Chapter F [Conscience as a comparator of action and norm], *conscience is described as a mechanism to establish "reciprocity"* in the sense of mutuality based upon equality or equal rights. Reciprocity and self-organization as a composition or creation form the basis of Chapter I [Sexual practice].

In detail, we introduce here as *anthropological background knowledge* for the comprehension of "freedom", "free will", "reciprocity" and "self-organization": (a) The levels of contents and explanation of *"action and behavior"* in connection with knowledge of action and thinking (Chapter A); (b) the bases and characteristics of *"social association"* and *"social space"* (Chapter B); (c) the neuromechanisms and neuronal correlates of *"generating meaning", "consciousness", "memory", "knowledge"* (Chapter C). In modeling conscience (Chapter F), I make use of such cognitive-neurobiological information. This is true, likewise, for Chapter I. In Chapters C (and F) I have decided to refer to function-related and consciousness-related *models,* especially those by British (Gray, Rolls, Gaffan) and Italian (Gallese) neurobiologists, which are of philosophical interest because they seem to lead to *theoretical integration,* notwithstanding their possibly provisional character.

Objective and value statements are highly mixed in this concept of a philosophical anthropology based upon reciprocity and self-organization. We are dealing with procedures, with concepts or plans and drafts, and with the necessity to make decisions. Of course, for this field, as well, the *principle of criticism and of search for alternatives* as the basis for self-organization and self-composition is valid. The empirical statements, norms and evaluations which are proposed or used here, can be criticized, discussed and changed, or improved, correspondingly. Thus, the concept of generalizable, as well as individual, *development* deepens its meaning eventually in the sense of a critical assessment and a conscious and rational search for alternatives.

4. Desiderata

To elaborate on the *Philosophy of reason* as a possible superordinated level for the theory of regulators of freedom, remains to be a future task. The philosophy of reason desired does not seem to me to be identical to the

extension of current (mainly economical[1]) theories of rational behavior or rationality. I prefer to think of a (dimensional-analytical) theoretical framework and prototypically of Hans Albert's critical rationalism and his philosophy of rational praxis (systematizing Karl Popper).

Such a possible superordinated meta-theory of the regulators of freedom would be supplemented by a *"Basic Anthropology"*, in the sense of the biologist Adolf Portmann [1897-1982] from Basle (Switzerland), as outlined in his book "Biologie und Geist" ("Biology and Mind"). Portmann had conceived this Basic Anthropology as a possible basis (in the sense of clarifying fundamental conditions and structures of Man and his/her living together with other human beings) for socially practical decisions: "...– foundations by means of which characteristic features of the humane could be represented, which would be removed from the fight of mere opinions and which could orient and contribute to the shaping of our conduct of life" (Portmann, "Biologie und Geist", Freiburg 1963:234: Herder). Portmann also writes (:270): "Corresponding to human nature, singularly natural for us, is the necessity of regulating decision, of conventional rules. The freedom of choice is humane. With this freedom of choice, consciousness also occupies its place in human behavior, its natural position as the instrument of insight and decision given to us by nature.... Each of our social solutions is historic and temporary, therefore to be characterized in principle as being surmountable and questionable..." Cf. Bunge VIII/1989: 332.

5. On the origin of the present book

The personal initiatory points were the scientific propaedeutics as taught by me in my former program ("Ancient American Languages and Cultures"), as well as my extensive experience as both a student advisor and doctoral thesis advisor, my individual studies in cognitive science and behavioral sociology in the seventies, as well as my later individual studies in neurobiology in the nineties. The basic idea was to generalize the thoughts from university education and conceptions of study to self-organization and self-stabilization in daily life and in conduct and composition of life in general (autopoiesis in a procedural sense).

In terms of a 'working accident' in Guatemala in 1986 which is briefly referred to in my book "Misstrauen führt zum Tod" [Mistrust leads to Death], vol. I: XXXVIII, I became an involuntary victim of an international biophysical-neurobiological project for which responsibility has not yet been assumed. I communicated details on that in an open letter to colleagues abroad in 2001. The enforced turning down of an official job offer

[1] With regard to economy, I refer to A. Sen's capability approach (1999:74).

for a senior full professorship in general ethnology in 1988 due to health reasons as a consequence of this incident, and my early retirement in 1991, forced me, unfortunately, to withdraw from work in cultural anthropology. The conservation of my short term and working memory, as well as of my speech and language faculties and my knowledge of different languages made it possible to turn to new studies. Years especially in the regions of the Pacific and Indian Oceans became a precondition for that.

The present work was elaborated in the form of first drafts in German between 1995 and 2000 in Hawaii, and especially in Bali and Fiji, under extreme stress and with strongly reduced access to university libraries (Honolulu, Darwin, Brisbane). This implied, at first, an almost complete renunciation of systematically researched empirical and philosophical literature. The limitation to 20 kg of air flight luggage also had its bearing here. The first faulty edition appeared in March of 2001 as a document and was later withdrawn by me.

The *second* German edition represents a strong improvement in and making more precise of the concept, and of many chapters, in terms of content, which were partially written completely anew. Thus, the book has grown and has become, factually, a new one. Among other things, overviews now precede the individual chapters for better orientation. The result of many years of enforced isolation resulted in many faults and blockades of concepts. The corrections, extensions and new versions were carried out primarily on Bali (Indonesia) and in Darwin (Australia), and to a smaller degree in Lanzarote (Spain), Sri Lanka, Hamburg and Hanover (Germany), between April 2002 and February 2004. The *third* edition contains further elaborations, especially in Chapters A, B, D and F, which were carried out in St. Denis (Île de Réunion), between July and August 2004, and in Kuta (Bali), Darwin and Perth, between September 2004 and June 2005.

I thank my brother Eckart Hinz for the editing of the first edition and for help in using a laptop and the internet.

6. Concerning the English translation

I prepared the English translation in Bali and Darwin (September – December, 2004). Jane Pears in Perth suggested many corrections. Range Cloyd, Jr., Language Consultant with offices in Quickborn (Hamburg), Germany, kindly proofread the English text before publication (September / October 2005).

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Hamburg, October 2005

A. FUNDAMENTALS AND STRUCTURAL ASPECTS OF HUMAN ACTION AND BEHAVIOR

0. AN OVERVIEW

The topical starting points for an integrated anthropology program are to be found in human action and behavior. Both are at the center of attention when reflecting on self-organization, namely the organization of one's life and social relations. Action is intended, i.e. goal-oriented. Behavior can be understood as being more reactive, automated or perceptive. The emergence and structure of action and behavior are to be considered briefly; thought and action or behavior are seen as a unit: Thought orders doing (Aebli). Overview:

I. Biological aspects:

The question of *genetically* pre-programmed behavior is treated overwhelmingly with skepticism. I refer to the discoveries of system and body axes genes (Hox) and genes of developmental control (Pax) which can help to explain the *construction plans* of multicellular animals. *Biochemical similarity* in very different species (e.g., Man vs. mouse) raises the question of how *genetic* arguments on *this* very basic level are to be formed and classified at all. The ability to reproduce sexually *within the species leads to social association* and this, in anthropological terms, is the central argument in favor of the *unity of mankind* (1.). *Bio-clocks* regulate many needs and life processes and, thus, lead to behavior (2.).

II. Human system aspects: goal-orientation, sociocultural conditions, language, learning, thought and affect

Goal-direction and buffer formation, i.e. the suppressing of interferences and the buffering of non-functional stimuli by neuroanatomical sub-organs, are basic to behavior (3.). This is the precondition for learning processes (see 7.). Action is learned *socioculturally* and takes place in a sociocultural context (4.). Some *considerations* on the evolution of the *ability of language and communication* follow. The human brain has regions which are specialized in speech-motoric and verbal-associative functions. These regions have precursors in primates of a lower level, for example, the ventral premotor brain region (5.). An attempt is made to explain the *individual acquisition of language* in its shortest form in terms of exchange processes between mother and child and by means of their cerebral *standardization and encoding.* The relationship between question (or instruction) and answer is seen as basic (6.). *Learning (7.) and thinking (8.) determine the structure* of human behavior and action. Positive and negative *affects* (cf. Tomkins), through reinforcement or punishment, form part of

the *motivation and perhaps even learning systems* and therefore contribute to the formation of behavior (9.).

III. Cognitive schemata, planning, and problem-solving

A theory of schema is briefly outlined (10.-17.; cf. 22C.). Schemata are conceived as being part of a self-organizing personality (10.). They serve as aids to orientation and self-management, or coping, in everyday life (11.). Schemata are learned. For that, the coordination of partial schemata is important (12.). Facilitation in neurophysiological terms, linearization and functional specification can be features of schemata (13.-14.). Schemata serve coordination (15.). Planning and problem-solving as procedures are primarily processes of coordination (16.). Basic concepts are summarized in (17.).

IV. Cultural schemata and domains of action

A cultural schema representing Kanjobal Maya divination as a semantic network exemplifies the procedural derivation of action from action knowledge (18.). Schemata of orientation may be found in naive theories of behavior and education which are frequently uncritical and help to justify prejudice and antisocial attitude, especially as far as concerns the destiny of the other person (19.). Domains of behavior and action which are characterized *by traditions,* mediated in socialization, and determine the *content* of daily life, are listed. The behavioral patterns referred to are defined as *'culture'* (20.). Finally, the thesis of *cultural relativism* (equal value of all cultures and tolerance towards other cultures) and its limits is briefly discussed (21.).

The *summary* contains a list of organs which mediate action or behavior. The concepts of intention, goal, and the causal explanation of an action are discussed. Thought and action are theoretically considered as a unit. *Schema theory* in its context of cognitive science may be considered as an example. We point out structural mechanisms which produce *coherence in individual and collective action* (22.).

I. BIOLOGICAL ASPECTS

1. THE ETHOGRAM AND THE QUESTION OF GENETICALLY PRE-PROGRAMMED BEHAVIOR

It is claimed that all behavior has a genetic basis (cf. Solomon et al. 1996 [4th ed.]:1111). This is problematic as there are no gene identifications for different kinds of behavior to date. Behavior is adaptive to the environment and physiological needs (cf. B.7(1)), homeostatic for the organism as a

system, and flexible to environmental stimuli. Behavior, therefore, has a biological aspect, but this is not necessarily identical to a genetical one.

1. Explication of "ethogram": The ethogram[1] consists in "all behaviors [in their content aspect] of a species". This presupposes the *classification* of behaviors and the production of an *exhaustive* inventory (all-quantor). The latter raises the question of the ability of innovation or of producing *new* behaviors. With the ethogram, special emphasis is placed on *innate* behaviors (cf. Vogel & Angermann 1992/II:401ff). This concept from ethology did not remain undisputed and was unsuccessful in cultural anthropology, especially with regard to methodology. Protocols of behavior[2], with at least a *heuristical* and *documentary* value, are certainly basic in the preliminary stage for an ethogram.

Man is to be considered as a system. Components to establish the system are genes. Functions of system maintenance and system development (metabolism, movement, reproduction, system limits, memory) correspond to the *living* system. Furthermore, behaviors correspond to the *living* system. The question is raised if *genetically coded functions and behaviors* must *also* correspond to the genetically coded system. The following arguments may be relevant:

2. Interaction between genes and proteins; intracellular metabolism: The complicatedness of these interactive interfaces, in my opinion, implies that an authentic reduction to genetically innate behavior has hardly been demonstrated to date (cf. however Vogel & Angermann 1992/II: 425: Experiments of crossing and recrossing with thread worms *[Nematoda / Rhabditida]*. We are always dealing with inferences on the basis of theoretical models ('black-box' problems). The interpretations remain correspondingly vague.

3. Hox, Pax genes: Fertile in theoretical and experimental terms is, in any case, the investigation of Hox genes (homeobox genes), i.e., *system (part) and body axes genes,* and, in conjunction, a second class of genes *controlling the development of the embryos, of the CNS (central nervous system)*

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[1] As *innate* or rather *genetically* pre-programmed are considered *strictly species-specific, rigid movements* ('inheritance coordination' = 'instinctive movement'). Some criteria for "innate" include: *rigid* releasing external stimuli, *stereotypical* forms of movement with very slight margin of variety, *build-up* as specific action potential and release searching *appetence behavior.* The *descriptive* ethogram corresponds to ethological *theoretical models of explanation,* which, among other things, attempt to build a bridge between physiology and behavioral expression. A clear representation is contained in Vogel / Angermann 1992/II:400-417. Note: 'innate' and 'genetic' are considered to be synonymous terms.

[2] As a conceptual alternative cf. the prototypical and high-quality analysis and document by Jane Goodall, "The Chimpanzees of Gombe. Patterns of Behavior", Cambridge, Mass. 1986: Belknap Press.

and of different organs (the Pax genes, paired box genes). These genes are central components of biomorphological *construction plans.* Naturally, this does not refer to experiments with human beings which would be unethical. Rather, investigative analysis emphasizes the interesting correspondence in the inventory of system and body axes genes (Hox genes), for example, in Man and in mouse, and the satisfactorily good correspondence of the inventories of Hox genes in Man and in fly *(Drosophila)*. In the human Hox genes, centromeres are coded (cf. Ruddle et al in: Annu. Rev. Genet. 1994/28:425). These are relevant for cell division and, therefore, for multicellularity.

4. Deficient genes: In addition, research into deficient genes is certainly promising. Such genes are expected to have a behavioral effect as causes of manifest diseases. This includes mitochondrial DNA with its higher vulnerability (cf. H.4.1[Item 2]).

2. BIO-CLOCKS AND CHRONOLOGICAL RHYTHMS

Pre-programmed and less pre-programmed behavior is partly regulated according to the principle of a genetically coded bio-clock; i.e., life functions (basic needs; cf. B.7(1)) and *life routines* are *regulated in accordance with certain rhythms (often mediated in humoral-hormonal terms):* for example, day-night rhythm (sleep at night, e.g. wakefulness, work, search for food by day; cf. Monnier 1983), lunar (monthly) or annual rhythms. There are several bio-clocks in the hypothalamus and the circumventricular organs. Bio-chronologically regulated domains of specific behavior include:

(1) In-take of food.

(2) Search for food in correspondence to the catchment area or territory.

(3) Group behavior (e.g., with hunters and gatherers), regulated in situative or seasonal terms: encounter, leisure, conflict, wandering.

(4) Intimate behavior, in respect to an "ecological niche": "buffer of distance" against third persons; or annual cycle (mating season of certain animals). In Man, situations of partner choice can be socially regulated. Ovulation or menstruation form a "monthly" (lunar) rhythm (with conceptive and contraceptive components).

(5) Chronological rhythms in Man are often culturally modulated or transformed (transposed). This also includes the "life cycle".

(6) Phases of growth (with encephalization and enculturation) that are determined by the pineal body. Sue Binkley (1988:287ff) tries to prove calendrical functions for the pineal body.

II. HUMAN SYSTEM ASPECTS: GOAL-ORIENTATION, SOCIOCULTURAL CONDITIONS, LANGUAGE, LEARNING, THOUGHT AND AFFECT

3. FUNCTIONAL BUFFER AND GOAL-ORIENTATION

Learning and successful action require the buffering of non-functional stimuli or, in the case of intrusion, the *termination of the intrusion* of functional behavioral and neural processes. *Goal-orientation and planning* in behavior are made possible by buffering. Behavioral sequences are linearly built up, perhaps despite competitive motivation, and are coherently coupled. *Goals* consist in the *cognitively anticipated result* of behavior or action. Human behavior is extremely goal-oriented. This is also true for the corresponding neural processes. Disruption of goal-directed behavior produces stress (Mandler 1979). Cf. C.2.2.1, C.2.2.2 (3), C.3.1/3.2(5), C.4(9); D.0.2(5-7); D.12(2); A.10, 11, 13; E.22-25; H.3.5.

4. SOCIOCULTURAL CONDITIONS OF ACTION

Physical and cerebral maturation in Man (encephalization, body growth, sexual maturity (puberty)) is *brought about* or modulated *by processes of socialization and formation of traditions:* growth and education as developmental variables in Man. This period of dependency includes the acquisition of: knowledge of action, repertories of action, *social rules* and *language.* Cf. B.1 [Survival of human offspring]; B.7(5) [Patterns of socialization]; E.13 [Cognitive, moral, social judgement]; B.6/8 [Reciprocity; role]; A.9(1) [Affect: socialization]. Action is almost exclusively learned in a sociocultural context. A sociocultural context enables action and co-determines it as innovation or as routine. Action takes place *in society or culture*[3]. Cf. A.5-10, 18-21.

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[3] Homan 's theoretical statements on *social behavior* can be considered to form a *bridge* between conditions of the human system and sociocultural conditions: They represent a *general mechanism (motivation) of the production of human behavior* specified in terms of content, incl. parameters (Homans 1974 (1961)).

1. Success: "For all actions taken by persons, the more often a particular action of a person is rewarded, the more likely the person is to perform that action" (Homans 1974:16).

2. Stimulus: "If in the past the occurrence of a particular stimulus, or set of stimuli, has been the occasion on which a person's action has been rewarded, then the more similar the present stimuli are to the past ones, the more likely the person is to perform the action, or some similar action, now" (:23).

3. Value: "The more valuable to a person is the result of his action, the more likely he is to perform the action" (:25).

5. CAPACITY OF LANGUAGE AND COMMUNICATION

1. Neuroanatomical pre-programming: Language and the capacity of communication are partly *neuroanatomically pre-programmed.* This includes the speech-motor areas 44 and 45 (Broca's area), the verbal-associative areas of the superior temporal sulcus (STS) and other parts of Wernicke's area. The arcuatic bundle (fasc. arcuaticus) connects the verbal-associative and speech-motor areas. But this bundle exists also with monkeys (Dingwall 1988:300/Fig.10), for example, sometimes with *Callithrix* ['silk monkey'] in South America which, of course, is unable to speak. We deal with the preliminary stages of language phenomena in terms of evolutionary biology. Some arguments elaborating on this idea follow.

2. Ventral premotor area: The ventral premotor area in primates corresponds to the human area 44 (speech motor area): "...represents forelimb and orofacial movements" (T. Preuss 1993:1238). It is assumed that Broca's area (areas 44/45) also includes these functions in Man: "...that Broca's area has both linguistic and somatic motor functions, and that evolution constructed the neural systems of language in part by "recruiting" existing motor areas, as Bonin (1944) suggested. The latter hypothesis suggests why language can be conveyed as naturally and fully with manual signs as with speech" (T. Preuss 1993: 1238). On the ventral premotor area cf. also B.2(3) and C.2.4(4). In anticipation of the following points (3.) and (4.), the function of this area can be characterized as developing intentions, as attributing intentions, as representing and as communicative.

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4. Deprivation-Satiation: "The more often in the recent past a person has received a particular reward, the less valuable any further unit of that reward becomes for him" (:29).

5. Aggression-Approval; 5.a: "When a person does not receive the reward he expected, or receives punishment he did not expect, he will be angry; he becomes more likely to perform aggressive behavior, and the results of such behavior become more valuable to him" (:37).

5.b "When a person's action receives reward he expected, especially a greater reward than he expected, or does not receive punishment he expected, he will be pleased; he becomes more likely to perform approving behavior, and the results of such behavior become more valuable to him" (:39).

6. Rationality: "In choosing between alternative actions, a person will choose that one for which, as perceived by him at the time, the value, V, of the result, multiplied by the probability, p, of getting the result, is the greater" (:45). Note that this concept of rationality seems to presuppose the *acceptance of* the *goal* (possibly implying *objects*) and the *context* of choice and, thus, the *interest* in it. This might be relevant if considering varieties of theories of "rational action".

These propositions (1-6) have to be seen as a *system* and in *simultaneous conjunction*, supplying part of the *initial conditions* within an explanatory schema to each other, according to the *aspects* of the situation to be explained (:40).

For a different model of explanation cf. A.18 (incl. note 14). Cf. Ostrom 2000 [Collective action].

The area Tpt in rhesus monkeys has been identified as the evolutionary correspondence to Wernicke's area in Man (Dingwall 1988:302).

3. "Chimpanzee language": It has been shown that monkeys, especially chimpanzees, are capable of learning and applying language-similar sign systems which have not formed part of their "sociocultural tradition" previously[4]. Dingwall (1988:288) informs us in tabulated form on the most important projects up to that point. In several independent projects, chimpanzees, gorillas and orangutans were taught 100-160, in one particular case, 360 signs of the American Sign Language (ASL). Learning achievements also include "considerable syntactical abilities". A case reported in detail is the Washoe Project (Akmajian et al 1990:424ff; 160 signs, combining 4-5 signs). One case which was assumed to document the relatively undeveloped syntactic ability of the monkey concerned is the Nim-Chimpsky Project. Dingwall (1988:289f) critically notes that methods of training strongly deviate from those of other projects. According to the assessment criteria in the comparative case of Man, many children would be excluded from proof of language competence.

On a third project, "Kanzi", Dingwall writes (1988:287): "Recently, using more controlled experiments, considerable auditory processing ability for spoken English has been demonstrated in *Pan paniscus* (the pygmy chimpanzee) 'Kanzi'."

In the Sarah Project, a "conceptual writing" representation of "sentences" as conceptual action sequences (in contrast to phonetically readable sequences of signs) with agent, recipient, and object is used. The conceptual writing system is learned by the female chimpanzee and applied in communication. This sign-writing shows a syntax, characterizations of individuals, case categories (Fillmore 1968), representations of actions, syntactic conjunctions and logical operators (for example, negation) (cf. the example with Vogel & Angermann 1990/II:422F, possibly, in the very beginning, the translation of a conditioning as a categorized sequence into component analytical conceptual writing).

4. Gallese's discovery: In B.2, a discovery made by the Italian neurobiologist Gallese is reported ('mirror-neurons'). This discovery motivates me to raise the following questions, taking into account the article by Preuss: In the ventral premotor area we can identify a neuronal and semantic-pragmatic congruence between the "observation of another person's action" and "one's own execution of an action" (activation of identical neurons

[4] Cf. on chimpanzees: W.A. Haviland 1996 (8th ed.):61-66, 113-117 [sign language, conceptual writing]; R.M. Keesing 1981 (3rd ed.):22ff; 24 [conceptual writing: objects, actions, proper names, formation of "sentences"]; critical overview: W. O. Dingwall 1988: 274ff; Akmajian & Demers & Farmer & Harnish 1990:423-431.

with otherwise identical features). Is it possible that we are dealing with the development of a (phonetic-phonematic, morpho-syntactic, semantic-pragmatic) *congruence* between *speaker* (ego) and *hearer* (thou or the other person)[5], or between *"speech-motor articulated"* and *"acoustically heard"?* Is it possible that we are dealing with the cognitive verbal representation of thought of other people within us and with representational plans of thought of us with reference to or turning towards other human beings ("I" and "thou")? In Gallese's second discovery ('canonical neurons') we recognize the coding of goal motorics and its reference to objects in terms of intention of action (intentionality). This would, therefore, be the *motor representation of a representation of an intention to interact with an object,* e.g. the recognition and intended appropriation of an object in order to hold it or to throw it. Could this be a starting point, in evolution to Man, for the emergence of a *code of second order,* i.e. language as *speech motor representation of a semantic representation of objects, and/or their features etc.* (cf. C.3.2 (2))? Would the emergence of a *syntax* in neuro-evolution be derived *from intention of action as preceding action, from action plan, action sequence and/or action scene*[6]*?* Following Gallese's discoveries, a corresponding coding of acoustics and sensory-modal

[5] The viewpoint of congruence of speaker and hearer plays a role in different models of language, e.g. quite early with Ch. Hockett as well as in artificial intelligence (cf. Schank's concepts of "meaning intended by the speaker" and of "simulated performance" within the framework of his "conceptual dependency theory". Psycholinguistically, the distinction between "language / speech production" and "comprehension" is relevant (cf. Clark & Clark 1977). Furthermore, Wittgenstein's "meaning is use" might be pertinent (meaning as a social rule or procedure which is shared by the speaker and the hearer).

The exact analysis of Gallese's experiments shows the following *preconditions* for the activation of mirror-neurons: (1) an *agent* (Man or monkey) is necessary, (2) an *object* must be present to which an (3) *intentional action* refers, (4) under *instrumental* use of a certain *body part (hand or mouth).* These categories correspond rather well to a *syntactic* (parts of) sentence analysis in the sense of Ch. Fillmore's case grammar. We refer to Bonin's theory mentioned by Preuss (see above, A.5(2)). Similar holds for the 'canonical neurons' ("...3D objects... differentiated... in relation to the effect of the interaction with an acting agent").

[6] After publishing the German version, I read Leonardo Fogassi's "The mirror system as a possible neural basis for the evolution of communication and understanding of intention" (= Analogue communication workshop 2004): "Complex actions are made by more simple actions. I will present recent evidence that the visual response of a set of mirror neurons found in the parietal cortex (anatomically connected to premotor area F5) can be *modulated* when the observed simple action (for example grasping) is followed by different types of simple actions in a sequence (for example bringing to the mouth, in one sequence, or placing, in another sequence). This *modulation of the mirror neuron response* seems to indicate that these neurons are able to *reflect* the *final goal* of a complex action, that is the *agent's intention*" (all italics, E.H.). I refer to modulation, categorical or 'conceptual dependency' [from final goal] and sequence as 'syntax-like'.

features in ego-centrically and allo-centrically identical neurons, in the temporal or parietal lobe, should be expected[7].

5. Pulvinar: The pulvinar plays an important role in the evolution of primates (relay of oculomotor-pretectal information, for example, of the reflex of convergence). In Man, optical, acoustical and verbal (language) information are proven (Kahle 1991/III: 174). There exist, inter alia, projections to the cingulate cortex. The anterior and lateral thalamic nuclei are further candidates for language processing units in Man (Dingwall 1988: 301).

6. Emergence of language is to be distinguished from language acquisition: The emergence of language[8] is a social, neurobiotic and bioevolutionary phenomenon which has not been explained sufficiently. One has to consider massive neocortical, neural and muscular, especially articulation muscular, cartilage and skeleton developments[9]. This indirectly includes the development of an upright gait. Cf. A.4, B.1(1) [Encephalization].

6. ACQUISITION OF LANGUAGE

0. "Pre-linguistic phase": It is necessary to undergo a phase of the *acquisition of pre-linguistic social categories* (e.g., the distinction of ego, person

[7] According to Yeterian & Pandya 1988:28 and Pandya & Yeterian 1986 (in: Jones & Peters, vol. 4:43 / Fig.27 and 42 / Fig. 26C) a convergence of acoustic, somato-sensory and visual information in the cortical field TPO-PGa, of acoustic and somato-sensory information in field Tpt has been verified. Gallese reports a recent discovery, "PF mirror neurons" in the posterior parietal cortex reciprocally connected with area F5 (ventral premotor area) [website "interdisciplines" 2004]. This discovery also seems to hold true for humans.

[8] This includes: *(a) Conceptual structures:* Cf. Wilkens & Wakefield 1995/18: 161ff: The two authors postulate the ability of forming conceptual structures [multimodal neurons e.g. in TPO *as already in the rhesus monkey* according to Pandya & Yeterian] as a precondition for learning and language acquisition, in evolutionary terms starting with Homo habilis (2.5-2 million years ago). *(b) Evolution of neuronal specialization:* In Gallese's discoveries, features play a theoretical role and are discussed in physical anthropology and in neurobiology as "pre-linguistic" evolutionary phenomena ("throwing" in motor terms, neuronal identical hand-mouth representations in motor modality, use of tools [here negatively reported]); cf. Gibson & Ingold 1993. *(c) "Proto-linguistic" criteria:* Taking up the discussion of conceptual writing in experiments with chimpanzees, we can recognize as proto-linguistic criteria of evolutionary biology, "categorial perception", "syntax", "symbolic-representing communication", "contextualization or functionalization (goal-orientation)", even with primates; cf. criteria in a different context of discussion in Ch. T. Snowdon in: Gibson & Ingold 1993: 113 / 114. Cf. Dingwall 1988.

[9] Cf. Dingwall 1988:291ff on Liebermann's model of the vocal tract (Tractus supralaryngeus), his theory of the evolution of speech and a thorough critique thereof (e.g. also of the hypothesis of the motor basis of speech perception). Concerning a sketch of speech nerve connections cf. Dingwall 1988:305/Fig.11 (e.g., direct connection with the cortical larynx area).

of reference, objects, and of different intentions and acts) and of the purposeful language acquisition of a baby or small child by communicative interaction with the mother and other persons (Halliday 1975:83). Language acquisition itself[10] could build up or even consist in the following facts:

1. Formation of signs: The emergence of an *interrelationship* between functions (communicative intention), meaning content and verbal and/or non-verbal expression (cf. Halliday 1975).

2. Quantitative patterns: For example, the frequency of repeating expressions by a small child and the frequency of addressing and of correcting by the mother.

3. Pattern abstraction: Corrections by the mother. *Corrections are feedbacks with standard patterns.* Build-up of sequential patterns, generalization and the completion of patterns could be explained in principle by the mechanism of the autoassociation matrix according to Rolls (hippocampal area CA3). 'Build-up of sequential patterns' can also be called 'syntactic patterns' in the case of language; cf. the neuro-evolutionary arguments in A.5. The formation of (semantic and morpho-syntactic) categories is particularly facilitated through comparison with remembered items in the subiculum (the subiculum as a comparator). The formation of schemata seems to take place in the entorhinal cortex (area 28) and in the cingulate cortex (my re-analysis of Vinogradova 1975). I assume a role of transcommissural midline-fusion for the area STS (superior temporal sulcus) (cf. Pandya & Seltzer in: Leporé et al (eds.) 1986 [Mapping]).

4. Pattern reproduction by the child: In terms of stages, from "simple syntax" to "complex syntax" (towards paratactical and hypotactical sentence patterns). The child seems to react to the verbal resonances of the mother (or other persons of reference) with verbal production or reproduction. A candidate organ for that purpose could be the hippocampus, possibly, to an increasing degree, an *inhibitory* memory (cf. Pohle et al, C.2.3 (1)), or the septo-hippocampal formation. The child forms lexical, syntactical and phonetic or phonematic *intermediate forms,* until he or she reaches a standardized form of language (cf. Halliday 1975).

5. Aspects of psycholinguistic functions are distinguished according to K. Bühler ("Sprachtheorie", 1934) and are intuitively learned early:

[10] Papalia et al 2004 (9th ed.):173ff refer to early language development: vocalization (crying, bubbling), recognizing language sounds (own name, parents' categories), gestures (pointing; conventional; representational / symbolic), first words (single word), first sentences (two words [18-24 months]; "telegraphic speech" of few essential words); early speech: simplification; understanding before being able to express; word meaning under- and overextended; rules overregularized. Overview in: Papalia et al 2004:173/Tab.5-5; Stillings et al 1989: 364ff.

(1) Expression (affect, feeling); (2) appeal (demand, imperative); (3) representation (description, statement, claim; also: proposal); (4) question (search of information; request). Cf. also Aebli 1981/II:327: effecting, representing, thinking and remembering. Halliday distinguishes, in principle, between the categories "representing-referential" vs. "interpersonal". He proposes a list of communicative intentions as an alternative to Bühler. A third category "text forming" (as message or dialog) is added later.

6. Communication: Directed curiosity, attention and purposeful verbal behavior (question or instruction – response); i.e., exchange of purposeful information on the basis of a problem, care or interest. The communicative connection is the relation between question (or instruction) and answer. Adult persons of reference adapt to a baby or small child in communication.

7. "Unmediated resonance neurons": Elaborating on "pattern abstraction", "pattern reproduction" and "communication" Gallese's recent work on 'mirror-neurons', 'embodied simulation' (www.interdisciplines 2004) and *'unmediated resonance'* (after Goldman and Sripada) might lead us to at least one of the bio-mental and biological mechanisms of language acquisition. The recently discovered audio-visual mirror neurons are of special interest.

7. LEARNING

The grey cortex in the monkey shows *plasticity.* Its shaping depends upon learning; cf. Merzenich's experiments with the monkey's fingers sewed together.

Learning is a function of the buffer in the central nervous system (CNS). This includes, for example, the suppression of neuronal background noise *(background activity)* or of other interferences in the registration of information (cf. Vinogradova 1975:20 [Thalamus]). The ability of concentration, tension (increase in the degree of wakefulness), centering, interest (pattern expectancy, pattern saturation, alarm), frequency or duration of the presentation of information relevant to learning and motivation (expected reward or punishment) are *parameters* of learning, the subject matter of learning and the social situation of learning. The *meaning* of *subject matter of learning* depends cognitively (and perhaps affectively) on the *feasibility to order and to integrate* it into an existing special memory. The subject matter becomes built into *a network* of existing knowledge (Norman 1973), or becomes added to available procedures or patterns of structure production (skills) or to themes and problems that one is already used to:

knowledge, ability, orientation in one's daily life and to the build-up of a naive world view.

Learning[11] as schema acquisition is dealt with in A.III/IV and C.2.4, C.3.2 (3), C.4C [Résumé]. Learning as problem-solving is considered in H.3.5 [Scientific problem development], H.4, A.16.

8. THOUGHT

Human behaviors and actions are analyzed and explained empirically within the context of cognitive structures and processes. *Thinking orders doing or behavior.* Thinking safeguards the structure of the course of action, reduces possible dissonances and develops new structures (Aebli 1980/I:20-21). Cf. Schank & Abelson (1977) and especially Aebli (1980/I: 87ff) [16 postulates or illustrations]). I itemize the following partially overlapping aspects of thought covered in this book.

(1) Thinking as information processing: *Cognitive neurobiology,* especially C.1-4 [the derivation of truth-value definite propositions, especially from scenes which are stored in the memory, C.2.4(1)]; overview in C.1, C.3.1, C.4A; cf. F.6. *Psychology of development:* E.13 [Cognitive, moral, social judgement]. *Cognitive or "naive ethics":* F., especially F.1, F.6. [*Cybernetics:* cf. Stachowiak 1969; Steinbuch 1966].

(2) Thinking as a problem or search schema and "idea" or "insight": A.16., E.25; H., especially H.3.5 (incl. notes). See Aebli 1981/II:62ff.

(3) Constructive processes to elaborate "ideas": H.2, H.3, H.4, H.4.1.

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[11] On theories of behavior and of learning in general, cf. Vogel & Angermann II:417-23. E.R. Hilgard & G. Bower, "Theories of Learning" (Englewood Cliffs 1974, 4th ed.: Prentice Hall). Cf. Solomon et al 1996 (4th ed.):1114 on classical conditioning and on operant conditioning. In ***classical conditioning*** "an association is formed (=learned) between some normal body function" (for example, [hunger and/or] physiologically meaningful food = *unconditioned stimulus*) and a "normally irrelevant stimulus" (for example, the ringing of a bell in Pavlov's experiments [when a dog was fed] = *conditioned stimulus)* which substitutes the unconditioned stimulus. The animal tends to react behaviorally (i.e., salivating) to the bell. In ***operant conditioning*** a behavior is to be carried out "in order to gain a reward *(positive reinforcement)* or avoid punishment". "In *negative reinforcement,* removal of a stimulus increases the probability that a behavior will occur." Cf. A.9 [Affects] and A.4, note 3 [Social behavior], and Hummell & Opp 1971 on behavioral sociology. On methods of learning, inspired by adult and university education, cf. Rogers 1974 and Saader 1977. For the aspect of cognitive psychology cf. Aebli 1981/II: 347ff [Learning, thought, development]. Cf. D.23 [Learning objectives]; E.9, A.19, E.11 [Curricular theory of education]; E.V-VII [Self-organization optimized]. On the neurobiology of learning cf. Vinogradova 1975, Rolls & Treves 1998, Steinbuch 1966, Calvin 1995; furthermore C.2.2.1(2(8,10)), C.2.2.2, C.2.3, C.2.4 (especially 4), C.4 (especially 13, 22-25]; Gallese 2000 and 2004a/b might be relevant; on motivation cf. C.3.2(5).

(4) Memory: concept of schema (A.III; *cultural patterns:* A.IV; *neurobiological:* C.2.3/2.4, 3.1, 3.2., 4F; thinking as use of memory: remembrance; computation or derivation of a cognitive result; cf. Fig. 1 below).

(5) Concept formation: I.8 [Componential analysis]. See Aebli 1981/II: 83ff; Rosch 1976 [Prototype], cf. H.2.3(2).

(6) Model formation. "Conscience" as an example: procedures as cognitive processes F.1; neurobiological identification of functions and localities F.6. See C.1.

(7) Thinking as use of naive behavioral theories or belief systems (Heider 1958; Laucken 1973; Abelson 1973): cf. A.19 and A.18/Fig. 1 below.

9. AFFECTS

1. Influence of socialization: Positive and *negative affects* are *modified* during learning and its reinforcement (negative: punishment; positive: reward), in the context of society and culture, i.e. by processes of socialization. They represent a system of motivation to action (cf. C.3.2 (5)). The socioneurobiotic bases of *violence or absence of violence* consist of the *regulation of distance*, *closeness and intimacy* with interactions, e.g., in the domain of property and emergence of conflicts; in the domain of territoriality as property; with regard to one's own and the other person's sphere of body feeling (cf. the role of peripheral neural mobilization according to Rolls (1999:70ff) as a possible integration of theories of affect and identity; E.17-19). Affects can selectively and cumulatively determine social atmosphere. The reader is referred to Gallese's recent discovery (website "interdisciplines" 2004) of the 'mirror-neurons of emotions and sensations': "This suggests, at least for the emotion of disgust, that the first- and third-person experiences of a given emotion are underpinned by the activity of a shared neural substrate."

2. Classification: The following dimensions of affects are central: presentation of a positive reinforcer (consequence: pleasure / joy, enthusiasm, ecstasy), of a negative reinforcer (consequence: worry, fear, terror / persecution mania); the omission or permanent loss of a negative reinforcer (consequence: relief) and of a positive reinforcer (active consequence: frustration, anger, rage; passive consequence: sadness, pain, depression). Conflict or feeling of guilt may result from the presentations of a positive and negative reinforcer simultaneously (Rolls 1999:63). Rolls's theory has the advantage of comprehending *affects as* part of *cognitive information processing* and also of interpreting *reinforcers* as a *cause of affects*. In terms of learning theory, one has to distinguish between the combinations of stimulus and reinforcer on one hand, and of stimulus and behavioral response

on the other (cf. A.7, note 11). The *attribution* of antecedents and consequences of affects is relevant in this context of argument (integration of attribution theory).

Tomkins 1991/III:18f distinguishes between (1) interest–excitement, (2) enjoyment–joy, (3) surprise–startle ; (4) distress–anguish; (5) fear–terror; (6) shame–humiliation; (7) anger–rage; (8) contempt–disgust [Tomkins argues for "dissmell" – the bad smell response – as (9)].

3. Functions: Functions of the different affects could include: rapid start in motor and endocrine terms in action, e.g. as correction or as defense; switch to differential motivation, communication or social binding as dependency, affiliation etc.; differential learning or remembrance success, e.g., according to the degree of danger or expectancy (Rolls 1999:67-70). The activation of the somatic periphery (skin, blood supply, skeleton muscles) plays some role here – probably more as an emotional effect than as a cause (Rolls 1999:70-73).

4. The specific human development consists of the emergence and further development of positive affects and in the social, bio-chronic and cognitively conscious stabilization of their conditions. In terms of evolutionary biology, a new existential level is therefore reached and it supplements, differentiates or partially replaces the assumed evolutionary advantages of flight and aggression, or attack, on the level of less complex species. These positive affects consist of joy, pleasure, curiosity, etc. Facial muscles and endocrine characteristics (Tomkins 1962/63), or facial skin (Tomkins 1979), are assumed by Tomkins to be basic, even for the negative affects.

5. Consequences: Within the framework of philosophy, the shaping of these positive affects and the education of how to deal with them and their conditions are at the focal point of attention. Positive affects are seen as a conscious part of social association, as an ideology critique, as personal liberation and as existential enrichment (cf. B. Russell 1930). The equivalent is true for the negative affects (for example, aggression) in connection with the practice of personal resistance (behavioral models) and with an education for peace and conflict resolution.

III. COGNITIVE SCHEMATA, PLANNING AND PROBLEM-SOLVING

10. COGNITIVE SCHEMATA SERVE TO ORIENT AND MANAGE DAILY LIFE: THEY ARE A PART OF PERSONALITY

A person as an organism orients himself or herself, and manages life and every day life to a large degree by means of informational (predominantly *cognitive*) *schemata*. *Learning or conceptualizing* such schemata and *holding* them form part of the personality or the personality system. These functional aspects constitute central components of problem-solving and learning capability, adaptability, experience (including its context and its intensity), and knowledge or skills. Cf. E.31 [Self-independence].

Such schemata include, especially, social interactive action schemata of communication, social exchange, and cooperation. Schemata are *instruments of self-organization.* Cf. E.IV-VII.

Different *types* of schemata and their cognitive parts ('ingredients') are described in Schank & Abelson (1977), prerequisites thereof in Schank & Colby (1973), e.g. Abelson [Belief systems], Schank [Conceptual dependency theory]. Minsky 1975 provides a *general theory.* Cf. Aebli (1980 / 1981) and A.22C. Cf. A.IV [Cultural content of schemata]; C.2.4, C.3.2(3) [Neurobiological schema definition]; D.25 (Table 1).

11. SCHEMATA OF ORIENTATION AND MANAGEMENT

Schemata of orientation include, for example, *beliefs* and knowledge (assumptions about reality, "facts"), norms (obligations, interdictions, permissions to act) evaluations (of objects, situations or actions: good, bad, neutral; beautiful, ugly, neutral). Such schemata are *interpreting* (*causal:* forecast, explanation, correlation; *functional:* regulation; *explicative:* conceptual explication) and *context-forming* ("cartography of details": system description, structural representation, interconnections): schemata of orientation in everyday life.

The *schemata of management* include *schemata of action, of technical operation or skills* (production of artifacts), and *of planning.* They can be identical with schemata of orientation. Here we prefer to emphasize the procedural aspect. Such schemata are *goal-oriented and action-guiding,* e.g. plans as goal-related and problem-solving related outlines of action, *scripts* as habits, customs of action or, rather, routines, *skills* (e.g., produc-

tion of artifacts, the building-up of discussions, conversations and arguments): schemata of managing everyday life.

Special attention is paid to planning and problem-solving as a construction of schemata (cf. A.16; E.V and H.3, H.4).

12. HOW IS A SCHEMA LEARNED?

How is a schema learned? (a) By teaching or lecturing or imparting information. (b) By observation. (c) By participation, doing it yourself, experimentation.

The basis consists of episodes which are situations or cases of learning (practicing) or from which a schema can be construed in terms of abstraction or generalization (schema formation, schema conceptualization). See Aebli 1981/II: 193ff., 235ff. A back-up seems to be necessary: several cases of observation and application. In the individual case *one* case of learning might be sufficient. A back-up is a feedback and includes a comparison and a reactivation of information.

Isolating elementary schemata and their dummy variables (or slots and possible fillers, following tagmemic linguistics), the concatenation of elementary schemata according to such relations as proportion, means-end (action-result), cause-effect, and sequence are part of learning or (re)construction processes.

13. CHARACTERISTICS OF LEARNED SCHEMATA: FACILITATED, LINEARIZED, FUNCTIONALLY DEFINED

The schemata once learned show the following characteristics:

1. Facilitation: The schemata are facilitated in terms of *learning physiology*. In terms of *electrophysiology:* no habituation, no decrease in strength of signal (cf. C.3.2(3)), but acquiring and then having at one's disposal the schemata according to the situation of application.

2. Linearization as syntax: The schemata have a syntax in temporal, physical and systematic terms. A complex context is linearized:

(1) Biophysically as a wave pattern (in neurobiological and psychomotor terms). For possible parallel processes, cf. A.15 and C.2.4(4).

(2) Semantically as a categorized sequence of meaning components (incl. couplings of partial schemas).

(3) With regard to situation and person as a progression of social interaction with the features of cultural, social and personal role adequacy in exchange and communication, i.e. in the case of *interpersonal action schemata*.

3. Goal and task binding: The schemata are goal or task bound, or functionally determined. Action schemata, in particular, have conditions for entry and exit (cf. Schank & Abelson (1977) on "scripts" or routines). Violations against that can produce disturbances. See E.29 [Unbound schemata]. As a concrete example of a learned schema, also in the sense of A.14-16, the outline in I.7.2 (in connection with I.4 and I.8) might serve.

14. LINEAR PROGRESSION AS A LEARNING PROBLEM

1. Linear and (non-) linear storage: Considering the point of view of linearization, some ideas by Donald Norman concerning the *process of learning* and its differential potential for disturbances follow: Learned content can be built into a network or linearly into a chain. In a chain, if one link is removed (i.e. by forgetting), the whole linearized sequence is cancelled. In contrast, a network is accessible from several points of connections (cf. D. Norman 1973).

2. "Suprasegmental features": Suprasegmental features of a schema are especially important in terms of learning practice (identifiers in the course of activities). In use, a schema has to be constructed which "holds out" over the temporal course (e.g. a mental model of discussion) and can be taken up again after interruptions.

15. THE USE OF SCHEMATA AS AN ACHIEVEMENT OF COORDINATION: FOCAL POINTS

The use of a schema requires partially – in the case of the interpersonal schemata of action – coordination with the speech and body rhythm: A *coordination* of accentuation in speech, in semantic content and psychomotorics is accomplished. In detail, this includes as *"focal points* of schema use":

a) Local reference (of the schema: *"setting"*).

b) Structure of task (goal set, eventually partial goals); entry and exit conditions.

c) Communicative partners (following up in thought and mediation).

d) Voice ("succinct, promoting comprehension" vs. "suggestive, hypnotic"); eyes ("addressing, including").

e) String of action ("rhythm of action"; proof by means of experiments of interference, provocations, i.e. functional disturbances or, rather, change in levels of interaction). Subdividing the string of arguments; the integral level and thread of energy and attention in terms of bioenergetics and neurobiology.

f) Similar: "Consciousness of sequences" (attention is directed onto critical points) and "consciousness of plan and conceptual outline" (guiding ideas; consciousness of message and meaning).

Reduced efficiency in coordination can result from a deficient control of focal points of schema use. An optimization of performance *('skill')* involves the *translation* of goal-directed *action or motor schemas into* [coordinated] *movements*, mediated by coordinating structures[12].

16. FROM SCHEMATA TO PLANNING AND PROBLEM-SOLVING

1. Examples: Planning and problem-solving consist, for example, (a) in resolving a crisis (cf. E.28/29), (b) in organizing oneself in everyday life, (c) in developing and solving a research or material problem, (d) in solving a problem in decision-making, (e) in resolving a problem of arrangement or composition.

2. The coordination of schemas: Open and complex tasks such as planning and problem-solving require the coordination of the following schemata:

a) Substantial goals and partial goals (as goal schema).

b) Self-attained and known state of work with regard to a problem (substantial or content schemata developed).

c) Schema of motivation (Why? What for?).

d) Schema of continuation (What is still missing? What is to be taken up?).

e) Similar: Working schema as *"current or actual schema of elaboration"*.

3. Working plan: According to Points 2a/e the production of a working plan is proposed *which can be used as a schema of elaboration.* This working plan may hold in principle for quite different substantial tasks[13]. Examples are: the construction of a house, daily shopping, solving a sociological or neurobiological problem, therapeutical (self-)intervention. The

[12] Cf. John Edward Owen, "Improving instrumental practice techniques through the use of a motor schema theory of learning", [Ph.D. dissertation, Ohio State University 1988], UMI 1989]; Owen refers to D. LaBerge (1981), "Perceptual and motor schemas in the performance of musical pitch", in: *Documentary report of the Ann Arbor Symposium,* pp. 179-196; Reston, VA: Music Educators National Conference.

[13] Cf. E.22-26 for the attempt to make a procedural generalization of the project concept. The procedural aspect of problems and their solution is dealt with in H.3.5 (note 2 and 3). Cf. Aebli 1980/I [Kap. V] and 1981/II [Kap. I]. Cf. Bunge 1967 on scientific problems.

working plan is structured as a sequence of sections of content material which correspond to the sections in a project, in a report, or in a task. The working plan includes the following components:

(a) What? The domain of the subject matter of the project or of the problem, respectively, ordered according to sections. A factual outline of the section under consideration.

(b) How? The methodical operations or activities which are assigned to each section of (a): how the domain of subject matter can be accessed methodically and can be processed.

(c) What for? A reference to the (partial) goal or task of each section of the project within the overall plan.

(d) When? The estimated time, i.e. the number of days, and the calculated starting point, i.e. the date for each section in a linearized sequence [of partially parallel, partially sequential needed results of work].

4. Representational schemata, plans and planning: Naive planning presupposes the use of schemata of the everyday knowledge of life. Such schemata are outlined by Abelson in his paper on "Concepts for representing mundane reality in plans" (in: Bobrow & Collins (eds.) 1975).

(a) Abelson distinguishes between states and state changes (ΔSTATE) brought about by ΔACTS ('delt(a)-acts', i.e. acts of change). There are "negative" delt(a)-acts (thwarting), prevention and undoing (Abelson 1975:303). Preservation might be another class of action ('pi-acts'). The states, state changes and actions are relations.

(b) The nine *primitives* of relations include (1) state (vs. change) of PROX[IMITY], (2) HAVE (having vs. change of having) something, (3) KNOW[ING] (vs. change of knowing) something [a conception, i.e. KNOW, can be an argument of KNOW], (4) having a QUAL[ITY] (vs. change in a quality) [a catch-all state, with enable and success conditions], (5) being 'OK FOR' an activity (vs. getting to be OK) [improving inadequate qualities; incl. conditions of instrumental devices, means, objects used], (6) state (vs. change of) AGENCY [subcontracting of certain actions to other individuals / "acting on behalf of–"], (7) state (vs. change) of LINK[AGE] [qualitative representation of "map" information], (8) availability (vs. change of amount of) POWER [interface between qualitative and quantitative aspects of plans], (9) existence of a (vs. change in the) UNIT [specifying what is joined to what at any given time].

(c) Typical *arguments* of the *relations* mentioned are agent, source / origin, terminus / goal, instrumental device / means or carrier / channel, conditions, energy amount, conception / information, object(s).

(d) A *plan* consists of actor(s), goal and subgoal states, and in "a set of deltacts directed toward a desired goal, these acts unfolding in series (and possibly also in parallel) under the aegis of the planner (by himself or using agents), such that earlier acts produce all the necessary but unfulfilled conditions for later acts" (Abelson 1975:299/300).

(e) *Self-organization*, i.e. life and daily life of the individual as well as collective action of organizations, depend upon the plan structures as outlined.

5. Problem development and problem-solving: With regard to research problems, we highlight the *field* of reality considered, its analysis in the sense of stating *relevant* components or variables (parameters, relations, processes) and the development of *fertile* questions in that context. These

three components, which are interrelated with each other and have to be taken into account simultaneously, form a balance of thinking for the development of a problem and for the formation of partial results or solutions for it. To produce continuous *coordinating relations* between the partial results of the planning or problem developing work process is cognitively *focal*. Looking for such relations leads to the production of further working results. These established relations define the reached state of problem-solving. As to the *phases* of problem development, to the *conceptual structure* of the problem, and to the *elementary forms of problem,* see H.3.5, Note 2; cf. also E.25.

17. RESULT: CONCEPTUAL DISTINCTIONS

With regard to further applications, I refer to Chapters E.Vff and I.7.2. I distinguish between:

a) The schema (the mental image of information).

b) The situational or contextual binding of the schema (purpose of application).

c) The coordinations produced by means of the schema.

d) The succinctness (unambiguity, sharpness or prototypicality of a schema); prototypicality (cf. E. Rosch) as an optimization in learning (storing) or application; to the succinctness corresponds:

e) The saturation (fill-in of energy, completeness, volume). Succinctness is information developed by means of episodic comparisons (as an ideal type, prototype). Saturation is biophysical or sociophysical and is based upon an optimal volume of experiencing something.

f) The metaschema with new superordinated points of view (e.g. “survival”, “affective-cognitive balance”, “conservation of the ability to act and to learn”). Such points of view can contribute to the definition of identity (cf. E.19/Thesis 1,2,6).

g) Planning and problem-solving as the construction of schemata or rather as the coordination of available partial schemata.

IV. CULTURAL SCHEMATA AND DOMAINS OF ACTION

18. PROCEDURAL DERIVATION OF ACTION FROM CULTURAL KNOWLEDGE OF ACTION

Action can be derived procedurally from beliefs or (cultural) knowledge. The following diagram (Fig. 1, below) represents the psychosomatic be-

liefs and actions of intervention of the traditional Kanjobal Maya in Guatemala. It exemplifies cultural schemata as semantic networks. (The model is idealized or simplified; cf. also Hinz 2002:202).

Entry conditions for the action *script 1 (and 2)*:
a) The client (or a family member) is ill.
b) The client holds the underlying beliefs to be true.
c) He visits the diviner *(action rule)*.
Exit conditions for *script 1 (and 2):*
a) The counseling has been completed by the diviner.
b) The therapy has been completed by the client(s).
Script 1: Client's visit → Diviner's divination → Diviner's therapeutic counseling
Script 2: (Additional entry conditions depend upon the outcome of script 1) Client's confession & ritual
Belief structure associated with, or underlying, the scripts:

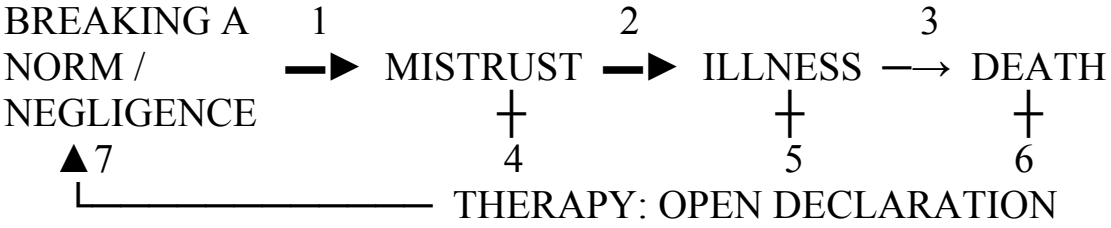

Fig. 1: *Integrated* semantic network of beliefs and action habits (customs or scripts) of traditional Kanjobal Maya (Hinz 1991/I:XXXIII ["Misstrauen führt zum Tod", Hamburg: Wayasbah]).

The *associated belief structure* in words: Breaking the norm or negligence "causes" (1) mistrust. [Concealed] mistrust "causes" (2) illness. "Without intervention", illness "leads" (3) to death. An open declaration (or confession) between the persons concerned "leads to an ending" (4) of mistrust, and "leads to an ending" (5) of illness. An open declaration "prevents" (6) death. An open declaration "repairs" (7) the breaking of the norm. The patient – and this is true for every traditional Kanjobal in a similar situation – is aware of the illness so that he or she visits the diviner. This is an *entry condition* for, and a part of, *script 1*. The diviner or healer determines the detailed cause-and-effect relationships and proposes the action of intervention which can be *formally derived* from the representation of the context of beliefs above (= *script 2*). We are dealing with the representation of an action routine (custom) in the sense of a law-like statement ["is true for all traditional Kanjobal"; quasi-invariance according to Albert] by means of which the culture-specific behavior or action

described is *explained.* The breaking of norms, the illnesses, the persons participating in the mistrust and the possible forms of therapy are classified.

As a further example for the analysis of the cultural content of schemata see "Critical reconstruction of Aztec structures of thought and action" (in: Hinz 2002, in German).

See in general theoretical terms: Schank & Abelson 1977 [Human knowledge structures; for example, conditions of entry into a script as rule of action], Aebli 1980/I ['action knowledge']; cf. A.20, C.2.4, A.10ff, A.22C.

The Ducasse sentence from analytical philosophy helps us to *explain* intended, purposeful human action within the relevant context of beliefs or knowledge *in causalistic terms*[14].

19. NAIVE THEORIES OF BEHAVIOR AS SCHEMATA

1. Naive theories of behavior (also including control): The so-called naive theories of behavior are of interest here (e.g. Heider 1958, Laucken 1973). They regulate, determine and limit social cognition, social behavior, and, thus, social learning. The possible resistance to them is of interest as well. These naive theories of behavior are (mostly uncritical) schemata of orientation or interpretation as well as of management, i.e. of procedural application within social action. This includes the "attribution of the locus of control": an event, *as seen from the point of view of the individual concerned or even of people in a certain society in general, is controllable or influenceable or not* (cf. E. Langer 1974). The consequences of applying these naive theories of behavior are not only to be seen as individual attitudes, beliefs and actions, but also as being a politically efficient influence and as a socially efficient structural cause, for example, within the framework of public opinion formation by parties and mass media. An important example for that is the attitude towards the destiny of the other person according to Heider (1958: 277ff., e.g. envy, compassion, sympathy; 252ff.: benefit and harm): components of self-responsibility or rather self-determination, of hetero-determination, of determination by chance when con-

[14] For a schema of explanation which includes such actions necessary for the realization of an intention, cf. Stegmüller II/1979:112ff [(KS) and p.118/119 (Ge) interpreted as an *empirical* law. "(KS)... (3') whenever somebody *believes* (italics E.H.) that q [an action] is causally necessary for p [an intention], he thus realizes q." According to Stegmüller's (1969) classification, we would deal with a "rational" (in the example above: an *empirical, because ethnographically documented* reference to reasons) or "psychological" explanation of an action. For a slightly different model of explanation, cf. Laucken 1973, Heider 1958 [CAN + TRY = DO; :84ff ('Can'), :109ff ('Trying')]. For a behavioral sociological model of explanation, cf. A.4, note 3.

sidering other persons' destiny should remain conscious in principle. They have different consequences in terms of acting. The attribution of "personal fault (guilt)" and "merit (accomplishment)" is included here. It also includes the *attribution of the learning and developmental capacity with regard to especially disadvantaged or underprivileged persons.*

A part of that includes neo-racist and pseudo-genetic figures of arguments; moreover, political slogans which counteract the concept of lifelong learning ('is not worth while', 'too expensive', 'there will always be stupid people', 'we already have, by now, too many well-trained persons'). The naive-theoretical attribution of the *will to work* and of the *consciousness of achievement* (for example, 'He who is unemployed is lazy') is especially interesting in terms of structure. It serves in the media and in parliaments to insult, to express hatred and reactionary antisocial bias and to prevent an acceptable social climate: 'Achievement is generated only under the condition of existential fear. It is necessary to coerce people into low-wage labor by means of existential fear and health stress, so that the economy can again flourish on the basis of cheaper jobs.' Even then, these low-paid jobs would still have to be created, and minimal wages, for example in Germany, would have to correspond to judgements of the Federal Constitutional Court (existential minimum defined). It is pretended that these jobs can only be created if legal protection against unlawful dismissal is eliminated as well. Such politicians obviously have heard nothing about theories of motivation and learning, nor very much about economic interrelations (planning of consumption, buying power). The creation of new jobs remains in the realm of the uncertain.

Such questions are dealt with in the social sciences partially as a critique of ideology; in philosophy as critical enlightenment (with regard to reason and rationality). The de-ideologization and humanization of naive theories of behavior means to filter them in the light of modern scientific, ethical, social philosophical, and legal insights. Cf. D. and F. as well as A.-C., especially A.21, B.12, C.4.

2. Naive vs. analytical theories of education: Naive theories of behavior also include naive, frequently uncritical theories of education, which quite often serve to justify prestige, conceit and arrogance concerning social rank order or (higher) education. These naive constructs are to be contrasted by analytical constructs oriented towards the structure of content, decision-making or learning objectives. The analytical constructs do emphasize the following, for example: (a) functional knowledge for orientation in everyday life and for the analysis of reality ("world view or image of nature", "image of society", "image of Man", "health" [the latter includes a reasonable concept of body control, gymnastics (keeping fit), yoga technique]

with the dimensions of "problems", "topical interests", potential for explanations. (b) Decision-making and behavioral models with the dimension "social affairs and communicative exchange" (reciprocity, friendliness, resistance, control of aggression). (c) Individual fantasy (receptive or productive or rather procedural, especially in the domain of the fine arts). (d) Models of taste and style as stimulation or resistance generator. (e) Moreover, "structural capabilities" such as mathematics, the use of a computer, the knowledge of languages and general thinking and articulateness.

20. CULTURALLY CHARACTERIZED DOMAINS OF ACTION[15]

1. Important domains of behavior or action are characterized by long processes of socialization and formation of tradition:

(1) Life cycle and social roles (in part, group-specific; in part, individual biographic-chronological patterns).

(2) Social structures; rules of living together.

(3) Food.

(4) Economic system; work for food and for an existential basis.

(5) Technology, incl. house construction.

(6) Acquisition of knowledge of the external and internal world: world view. This includes "religion", for example, the interpretation of the meaning of life processes. Restitution of health (curing).

(7) Discussion and decision-making or political structures (rules of decision by a social group; the institutionalization of these rules).

2. Culture: These domains of traditions are accessed in part by imitation and participation, or in part by teaching and interpretation. The *patterns* which are available for these domains are called *'culture'*. This also includes expressive behavior (songs, prayers, dances, etc.). Furthermore, 'culture' is also to be considered as a principle of organization or composition (referring to activities) and as a principle of configuration ("gestalts"; referring to results, systems, artifacts): values, norms, *beliefs*, action routines or customs (also *scripts*), *skills* (e.g. house construction), artifacts. 'Culture' might therefore refer to a more or less coherent *style* or *pattern.* The culture-specific domains of behavior or action listed also correspond largely to basic needs (cf. B.7(1); C.3.2(5); A.2).

[15] Cf. R. Keesing 1981 (2nd ed.); W.A. Haviland 1996 (8th ed.).

21. CULTURAL RELATIVISM

Cultures as clusters of patterns or styles show (a degree of) coherence. Cultures as explicated in A.20 are relative. In objective terms, they are *of equal value* as existential orders. In cultural anthropology, this is the thesis of so-called cultural relativism, with the *prescription of tolerance* tied to it. This prescription has its *limits* primarily in questions of human rights (i.e., in case of their violation) and political co-determination (i.e., in case of its withholding). Furthermore, the limits of cultural relativism are valid also in questions of an "empirical-objective orientation" (Rudolph & Tschohl). They seem to be valid without exception for every culture, even for one's own occidental culture, with regard to the *provisional aspect of culture in the face of the empirical search for truth* and *for better practical alternatives.* These limits become highly visible *as problems* by means of "globalization" in the form of the exchange, participation, systematic knowledge, critical information and the search for alternatives (progress in epistemic knowledge and in praxis). This field of problems includes a possible right of personal and social development. The underlying *image of Man* is, therefore, not the human being mutilated by socialization, suppressed, missionizable and exploitable, but the human being with his or her basic needs and rights of critical solidarity, of personal degrees of freedom and in constitutional equality with other human beings.

22. SUMMARY

A. Organs of behavior

0. We conceive electromagnetic *field potentials as bio-signals,* and *receptive fields* in the peripheral nervous system (PNS; skin-sensory, visual, olfactory, acoustical, etc.) *as* (parts of the) *organs of perception.* Bio-signals are received and/or transmitted. *Reflexes* are bio-signals. *Correspondingly, reflex zones might be considered as* (parts of) *organs of signaling*. *Interpreted* bio-signals can co-determine interaction with the other person or with the environment.

1. Instrumental mechanisms of behavior and action include the following *organs*: motor, perception, memory, learning and encoding organs, bio-clocks, organs of affective mobilization (e.g., skin, facial muscles, glands); central processor (operationalized in terms of memory of attention, short-term and working memory) and long-term memory as organs of thought.

2. Organs are genetically anchored in *plans of construction.* The behavior which corresponds to these organs is probably "developed" in interactions

or feed-backs between organs and the outside world. The assumption of direct genetic encoding is controversial and possibly unnecessary.

B. Intentions, goals, causes: causality of actions

3. Effecting forms of organs include *bio-chronic rhythms,* internally, and *bio-magnetic rhythms,* externally, as being a stimulus or release of behavior (frequently mediated humoral-hormonally within the chain of signals).

4. The concept of the (particular) action and of the (general) category of acting includes the concept of *intention (of an action). Goals, anticipated results of action* in information-processing, correspond to the *cognitive* aspect of intentions of action. Facilitation and/or "gating" and a "readiness potential" correspond to the *physiological* aspect of intention of action (cf. C.2.2.1 (2(3)) and C.2.2.2(7)).

5. Causes which shape and trigger action or behavior include goals or intentions of action and other types of motivations (cf. C.3.2 (5)), e.g., *affects, values,* also including considerations of utility, *expectancies* of reward, punishment or communicative understanding. These "motivations" can contribute to the initiating of an intention of action (and, thus, the action itself).

6. A causalistic explanation of actions is possible following, for example, Ducasse, Tuomela and Stegmüller (A.18). *Determinants of intentions of action* include wants and duties. *Determinants of actions* include intentions and beliefs of the correct use of means; moreover, social norms and expectancies (cf. D.0.3, especially after von Wright). *Norms* may include categorical and hypothetical ones (after von Wright (1963), "Norms and Action", London: Routledge & Kegan Paul)

7. On the basis of *personal* and/or *cultural beliefs* (assumptions, beliefs of meaningful and purposeful routines of action and their efficacy, plans of action, *scripts,* "knowledge"), action can be initiated, guided and sequentially developed. These cultural beliefs can form *part of a causalistic explanation* of actions. Culture-specific routines of action (customs) and plans serve, for example, the satisfaction of needs, the solution of problems or the organization of collective action.

8. Actions or behaviors can have an imprecise or goalless outcome. They can be disturbed (E.28/29), thus leading to an *incongruence* of the goal and result of an action, or to an omission, or the breaking-off of an action. Interruption produces stress.

C. Unity of action and thought; coherence

9. Action and thought form a *unity:* Arguments support an intention, a decision, a certain action. Planning and problem-solving as partially open patterns of action and the development of courses of action form one

aspect of this unity. Another aspect consists in the theoretical penetration of this relation: The concept of the *schema of action and of corresponding belief schemata connected to it* is examined (cf. A.10-19, especially 18 and 11 [*beliefs*, *scripts,* plans, evaluations, norms, skills]), the reader is referred to the theories of schemata in cognitive science, to Schank & Abelson 1977, Minsky 1975 and Bobrow & Collins 1975. A neurobiological deepening is offered inter alia in C.2.4. Cf. Gallese 2000 and 2004a/b on social cognition.

10. In the cognitive planning of an action, and in acting itself, relations are generated between the participants of action, means, tools, localities, (partial) goals, causes, etc. (Aebli). These relations correspond to Fillmore's case categories (causality simplified to agency) or Schank's categories of dependency. *Such a generation of relations coordinates thought, action, social and environmental exchange in relative coherence.*

11. Knowledge of action corresponds to action. Action and knowledge of action can be *represented in semantic networks. The formatting* of such a representation is a problem of cognitive science, just as *building the model of storage in terms of a (semantic) memory* (cf., for example, Aebli 1980 / 81; Schank & Colby 1973; Bobrow & Collins 1975; cf. C.2., C.3, C.4(23) in the context of functional anatomy and cognitive neurobiology). On the relationship of schema and world knowledge, concerning the build-up and leveling of schemata, cf. Aebli 1981/II:195ff.

12. Perception safeguards the build-up and execution of action. Perception uses *neuronal detectors* which help to guide the direction of perception. Cf. C.1 and C.2.1(4).

13. Patterns of action and behavior, and the verbal, conceptual and social *patterns* associated with them are *learned in* primary and secondary *socialization* (A.4, B.7(5); C.4(26)).

14. Coherence forming structural mechanisms which produce thought about action, individual and social action are, for example, conscience in ethical terms, daily plan, life plan or intermediate-term focus, with regard to self-organization (E.V). *Collective action* is planned, controlled, and executed by social, political and economical organizations in the form of tasks or programs. As organizations and institutions of social association, they constitute the structural mechanisms which produce coherence in social and collective action (chapter B.).

References: A.1: 166.; 152.; 40.; 159.; 21. *A.2:* 110.;18. *A.3:* 140.; 67. *A.4:* 72.; 89.; 135.; 63.; 170. *A.5:* 125.; 52.; 172.; 72.; 89.; 35.; 39.; 6.; 60.; 167.; 54. *A.6:* 70.; 130.; 132.; 164.; 64.; 65.; 6.; 53.; 54.; 55.; 119.; 158. *A.7:* 107.; 164.; 165.; 113.; 166.; 80.; 152.; 1. *A.8:* 139.; 140.; 154.; 4. *A.9:* 131.; 161.; 162. *A.III:* 4.; 3.; 20.; 109.; 139.; 14.; 149.; 113.; 133. *A.18:* 139.; 74. *A.19:* 73.; 98.; 97.; 3.; 12. *A.20:* 89.; 72.; 100.; 135. *A.21:* 135. *A.22:* 122.; 156.; 4. *In general:* 49.; 86.; 119.; 4.; 154.; 175.; 116.

B. "SOCIAL ASSOCIATION" AS VIEWED BY ANTHROPOLOGY, SOCIOLOGY, ECOLOGY AND NEUROBIOLOGY: A CONVERGENT PERSPECTIVE

0. PRELIMINARY NOTE AND OVERVIEW

1. I place the basic concept of "social association" at the center of my interpretation of reciprocity (cf.B.6) and self-organization as regulators of freedom (cf. F.2; E.22(4)). Due to *constructive* intent, the present contribution is limited mostly to ortho-functions of social associations. It refers less to the socio-critical analysis of social dysfunctions (but cf. B.8-10, 12). The following outline of arguments concerns the connections between *bios,* the sphere of the somatic, the neural and the dynamics of the species, and *society,* the sphere of the formation of rules and traditions, forms of social association, their change and interpersonal exchange. This *interface* has the property of a field or buffer, with emergent, i.e., hardly reducible properties of new systems and system levels in the evolution of primates, especially of Man. A number of arguments are derived from social anthropology and refer to societies of less complexity.

2. An overview:

At the outset of my essay on social association, I place, as a structuring idea, *the care for human offspring and their survival, the sociocultural conditionedness of psychosomatic maturation,* as well as *the regulation of heterosexual relations,* especially by means of the prohibition of incest. Social association leads to the formation of social groups. This includes the formation of alliances, a first (ambivalent) step in the direction of conflict management (peace as seen from two social localities; or possibly war as seen, for example, from three different social localities). The continuance of a social group, or rather of a society, depends upon sexual reproduction (1.). Moreover, I place *social space* and its structure as a sphere of social association at the center of my essay. Social space is *neuronally* represented as being an internal model of the outside world, in the sense of a distinction between "I (ego)", "other (person)" and "environment" (2.). Social space is also *environmental*, *working and problem-solving space* (3). This also includes the distinction of *"closeness" vs. "distance"* (4.) and the *extension* of social space as a sphere of possession or property and use (5.). Social association is based on *solidarity* and *reciprocity* (6.). Social association is characterized in terms of *needs and their satisfaction.* Social association includes principles such as *cooperation, communication, conflict regulation (law, justice), and socialization* (7.). Social association,

moreover, includes *roles* and *organizations or institutions* which can be analyzed from the viewpoint of equality, or rank order, or inequality (8.). Some ideas on the *space of nature* as a social space follow, for example, on health and ecoterritorial aspects (9.). In a short sketch of *social evolution,* an attempt is made to cover the aspect of growing complexity (institutionalization, spheres of interregional exchange; inequality, rule in correlation with economic monopolies and differential prestige). Short explications of the concepts of "violence" and "resistance" follow (10.). Some *planning criteria of a communal organization* are discussed. A concept of *health* underlies them (11.). In summary, *features of social association,* criteria for social *binding* and social *disintegration or fission,* and forms of *repression to be abolished* are listed. Some normative notes on *social praxis* follow (12.).

See, moreover, D.6 [Free will in the social environment], D.10 [To feel free], D.23/24 [Development of freedom]; E.8-10 [Personality sociolog.], E.13 [Capability of social judgement]; F.1 [Ethics / conscience], F.1.2 [State goals], F.2 [Action as social obligation]; G.2(1) [Sense of survival], G.3(2) [Resistance].

1. THE BASES OF SOCIAL ASSOCIATION: SURVIVAL OF HUMAN OFFSPRING, SEXUAL RELATIONS AND SUPPORT

1. As a starting point for the consideration of social association, I choose the *care of human offspring, for their life and survival* as a basis. This includes in detail: sexual reproduction, child raising and the long period of somatic and socialisatory dependency of Man for 14-18 (or 20) years (phase of baby, child, adolescent), as well as the *stabilization* of social relationships necessary for this development.

The course of the *psychosomatic maturation* in Man is determined by this long phase of dependency on mother, father and social reference group. This cerebral and somatic maturation – *encephalization, body growth, sexual maturity (puberty)* – is brought about or modulated *by* the specifically human *processes of socialization* and by *the formation of tradition.* Referring to the *formation of the brain as a result of socialization* – the brain as a verbal-communicative, as a social, as a biological organ – the convergence of the sciences of the mental, of the social, and of living nature can be grasped (cf. C.2(4)).

The acquisition of *language,* communicative abilities, *social rules,* social behavior, and of cultural tradition, the division of labor, for example, in food production, and, in general, the *organization* of learning, work, the

satisfaction of needs, safety or *survival, are the components and results of social association.* Social association makes it possible that human offspring can become independent.

2. Social association leads to the formation of social groups: Kinship is based upon descendent (consanguinal) or marriage (affinal). Kinship is organized on a classificatory basis, and by means of the regulation of rights and obligations. Culturally, *marriage* is the principle by which it is possible to organize and to stabilize the heterosexual partnership as a normative tendency. *Incest prohibition* (a social rule) is an *organizational principle* which underlies, at least, marriage and kinship as a *nuclear,* and, in part, the extended *family.* Further restrictions of sexual relationship depend upon sociocultural rules and their variance. *Residence and territory* as social places belong to social association and to the development of a naive idea of "social space". The existential functions of dwelling, living together (incl. sexual reproduction), socialization and, partially, of working are bound to residence as a household with its members, the 'domestic group'; the functions of food production or working are thus bound to the territory.

3. Alliance formation (in societies organized in terms of kinship): Lévi-Strauss interprets marriage as a formation of an alliance on the personal, i.e. sentimental, relational and attitudinal micro-level. He highlights this function of the forming of social association as a constructive counterpart of incest prohibition. The relations of organizations (for example, of exogamous lineages or clans; cf. B.8[3(1)]) can be structured by the rule of "marrying out" and of reciprocity(-A) (cf. B.6). Thus, on the social and territorial macro-level, these relations are then considered as being an alliance from which the following functions arise: e.g., cooperation, human, economic and cultural exchange (cf. B.10(6)) and society formation[16]. However,

[16] "At the risk of oversimplification and misrepresentation, the theory may be briefly stated like this. The prohibition of incest, though variable in its range, is a universal rule and, though often rationalized on "biological" grounds, is in fact a social rule designed to preclude marriage within the family and thereby to establish a mutual dependency between families (i.e., to create society) by compelling men to exchange their sisters and daughters in marriage with the men of other families. The rule to "marry out" is but the converse of the rule to "marry in", and both rules have the same function to establish relations of exchange between families. In some societies this integration of families into a larger social system is accomplished by the exchange of women for other kinds of "property", as in the payment of so-called bride-price, but in others women are exchanged, directly or indirectly, for one another. The various forms of cross-cousin marriage may be interpreted, Lévi-Strauss argues, as special cases of this general phenomenon of "marriage by exchange"." (Scheffler 1973:780f). Cf. Oppitz (1975:108ff.); Lévi-Strauss (1967, Kap.2) ['Kinship as attitude and sentiment']. The social rule of incest prohibition could orientate itself by a biotic substrate, e.g., no "genetic defect" and no restriction of ability of survival, no (sexual) disinterest, no "infantile regression"

these do not always seem to be sufficient to make peace and to maintain it as counterpart of war (cf. the cases of *simultaneous* relations of marriage and war in societies without central power as investigated by H. Lang (1974))[17].

4. Network of support and acquaintance: In modern complex societies, some functions of alliance formation are replaced by those of private or personal *"systems of support"* (Antonovsky 1987, cf. E.14(4)). The principle of kinship relationships is partially replaced in modern, complex societies by relationships of education, profession, neighborhood or acquaintance (for example, in the place of residence). These are supplemented by functional principles of labor rights, the social state and the state of justice.

5. Social association, formation of society and sexual reproduction: Social association in continuity produces tradition and patterns. Social association underlies the formation of societies. The typology of societies include: (1) bands of hunter-gatherers, (2) tribes, (3) chieftains, (4) state societies. After Marion Levy the following statement is valid: "Societies cannot persist without infants". This is the counterpart to the insight: Children cannot grow up without adults. The requirement to make the survival of human offspring possible by social association corresponds to the requirement to make possible the survival of society – as a naive concept, design, developmental program, form of life – by sexual reproduction. From this thesis no obligation of one's own individual sexual reproduction can, of course, be derived. Cf. B.12A(13) [Intergenerational transfer of care].

2. SOCIAL SPACE IN NEURONAL TERMS

1. Social space of Man or of primates is neuronally represented: Via sensory perception and motor systems, a spatial image which is socially differentiated is neuronally built up:

a) The distinction between egocentric, allocentric and system-in-system-related (i.e. defined by a TV-screen in space) neurons is basic.

b) An example is Rolls's model of the hippocampus: Persons, objects, and spaces can be neuronally charted and defined as self-related, other-person-related or space-related.

(reinforcement of dependency) and no (permanent) emotional destabilization of family relations. Different combinations of factors might contribute to the exclusion of particular marital unions (parent – child vs. brother – sister). Cf. Sidler 1971. Klein (1991) has a clear outline of sociological and biological causal mechanisms and factors. There is a difference between a *relationship* (custom) and an *affair* (transgression).

[17] Marriage behavior seems to remain *individual* and does not seem to lead to the formation of a rule of the peacefulness of the *social* organization.

2. Social neurons in detail:

(1) Egocentric neurons: "...(hippocampal) responses remained in the same position relative to the monkey's body axis when the screen was moved or the monkey was rotated or moved to a different position in the laboratory." Moreover, we are dealing with two different types of allocentric neurons:

(2) System-in-system-related neurons; "in the first (type), the field was defined by its position on the monitor screen independently of the position of the monitor relative to the monkey's body axis and independently of the position of the monkey and the screen in the laboratory... (the neurons') fields were defined by the local frame provided by the monitor screen." This is also likely to be true for the *neuronal representation of another person.*

(3) Environmental neurons: "...in the second type of allocentric finding, the field was defined by its position in the room" (i.e., independent of the position on the monitor screen; E. Rolls 1990:463).

3. Canonical and mirror-neurons according to Gallese: Gallese (2000: 327) in his article "The acting subject: toward the neural basis of social cognition" differentiates between 'canonical neurons' and 'mirror-neurons'.

Canonical neurons code motor actions as well as their *relation* to visual features of objects which trigger them (preliminary stage of a rule, E.H.).

Mirror neurons: "Mirror neurons are not activated during the observation of objects but only *during* the *observation of an agent* (a human being or a monkey) *acting* in a *purposeful* way *upon objects with his hand or his mouth*. Neither the sight of the object alone nor of the agent alone is effective in driving these neurons. Mimicking the action in the absence of the target object or using a tool to execute the object-related action is similarly ineffective in driving mirror neurons' activity" (italics E.H.). *Part* of the neurons is, in addition, *identical* for the observation of another person who executes the action and for one's own performance (on the part of the "observer"). As a result, this part of the neurons can be considered – in terms of componential analysis – as a representation of the components which are *common to* the observation of another person acting, and one's own execution of an action (Gallese 2000:327; "grasping, holding, manipulating, and tearing objects are the actions that, both when observed and when executed, most frequently activate these neurons"; cf. A.6(4) [Speculative thoughts on the origin of language]).

We-centric neurons: Gallese (2004a/b) has recently discovered 'mirror neurons of emotions and sensations' and has hypothesized a *mechanism of "embodied simulation" which mediates understanding in terms of "I" and*

"thou" (or: "the other") and shared features. Gallese refers to 'we-centric' neurons in communicative terms.

4. Contribution to identity and social comprehension: These observations contribute directly to the following thoughts: The representation of social space by means of neurons is the basis for the development of *one's sphere of body feeling,* of a territorial understanding and of a comprehension of *the inside and outside world* underlying the formation of identity and existence. The characteristics of "ego (incl. autonomy)" vs. "thou" and / or "the other", "the small (intimate) we" vs. "the larger we" vs. "the (distant) they (= third person plural)", object vs. the relation to the object, behavior vs. intention(ality) are differentiated. A comprehension of other people's and one's own actions and emotions is also a basis of social association, communication, and cooperation.

3. SOCIAL SPACE AS ENVIRONMENTAL AND WORKING SPACE

Social space can also be environmental space, working space, problem-solving space, space of perception and of action, of affect, and even of thinking (for example, learning and teaching). We thus determine processes of thinking, working, interaction, appropriation of environment, formation of affect and attitude as being *social.*

4. CLOSENESS VS. DISTANCE

1. Social "closeness" vs. "distance": A basis of social neurons are the differences of social closeness and distance which become more differentiated with increasing age. These differences have, firstly, a neurophysical basis oculomotorically (visual perception), secondly, in the somato-sensory code, later in the socio-cognitive or socially identificatory "code", and the experiences coded therein (postulate). Thus, *degrees of closeness* (familiarity, intimacy, etc.) *and distance* (affiliated, "equal" vs. nonaffiliated, "strange") are differentiated: in visuospatial, categorial, interactive, communicative, atmospheric and attitudinal terms.

2. Familiar vs. non-familiar: "Familiar" vs. "non-familiar" are socio-neurobiotic characteristics which can go together, for example, with differentiated communicative behavior or with alarm reaction (danger). Of course, these behaviors are modulated by these events which have happened to one (passive), or by active acquisition in learning. The perceptive-neuronal contrast of "closeness" vs. "distance" probably forms a central component

of *social solidarity and identity*. Mistrust in the face of the non-familiar, and the *methodical reduction of mistrust* in the face of possible abuse are necessary for survival for individuals, as well as for social groups. *Trust* as a *legal or normative reduction of mistrust to solidarity and reciprocity* defined as expectancies, rights and obligations creates social association.

3. Continuity and coherence: Guiding these explications of familiarity and closeness is the idea of the continuity of experience, social exchange, feeling of life and formalization (in social or legal terms as a custom, norm, right, or obligation). Coherence as a social feature refers to permanent commonality, e.g., in beliefs, norms, values, and to consciousness of (communal) affiliation and communication. Coherence can be conserved even with discontinuing experience.

5. EXTENSION OF SOCIAL SPACE: SPHERE OF PROPERTY AND USE

Social space is differentiated as the outside vs. the inside world, and the environment in contrast to the individual sphere of body feeling. Social space is further differentiated in categorical terms by *use, appropriation, or property (incl. possession):* The distinction between "my" and "your", between "our" and "your" or "their" is developed here. These distinctions together with the concomitant intentions and schemata of action are learnt (cf. A.III/IV). The rules which regulate this sphere of property and use are social and become part of a *tradition*, i.e. schemata of action, which can be transferred onto further generations.

6. SOCIAL ASSOCIATION IS BASED ON SOLIDARITY AND RECIPROCITY

1. Principle of solidarity: Social association in an organization, e.g., in a community or in a state, is structured by the principle of solidarity. Solidarity itself is determined by affiliation and help.

(1) In a community in solidarity, *everybody* must be able to satisfy his or her basic needs.

(2) A community in solidarity is a community which *compensates:* poverty, misfortune, disadvantages (also illness), age of *needy individuals* (i.e. of people too young or too old).

(3) The goal of a community in solidarity is the participation of *every* member of the community *as a citizen* in accordance with the rights and with the idea of the society or nation as an organization of living together,

of survival and of equality. This participation is based upon rights and obligations (normally to pay taxes, for example).– Cf. F.1(3-4).

SOLIDARITY	
FUNCTION	CONSEQUENCE
Life functions	Basic needs for all covered
Social community functions	Compensation of the needy
Social membership functions	Participation of all (rights & obligations)

Table 1: Components of solidarity

2. Reciprocity: Reciprocity is a norm of mutuality *or* equality (with regard to rights or entitlements, or obligations, even in abstract or indirect terms). Keeping it is socially controlled, for example, by consciousness, by a positive attitude, i.e. internalization, or by censorship, conflict, i.e. normative pressure. This norm characterizes social action, for example, in informal terms with regard to verbal expression, affect, initiating of an action, or in formalized terms.

'Reciprocity-A', in the descriptive sense of social anthropology, is *mutuality* in actions of exchange (obligation to give, to take, to repay) which is *even possible with asymmetrical relations* which are rank ordered.

'Reciprocity-B' is mutuality on the basis of equality (i.e. equal rights) in the normative sense of democratic social and legal philosophy. It includes and focuses on equality under the law, in voting rights, in social benefits and obligations (e.g., of mutual help; even intergenerational in abstract terms), on the equality of man and woman, but *not necessarily* with regard to economy and to minors *in every respect.*– See E.22(4).

3. Organized solidarity is abstracted or extended reciprocity: Exchange, support and existential safeguarding are based upon legal equality and social affiliation (definition of a "community in solidarity"). Modern forms of the unity of solidarity and reciprocity include: work for fair wages, taxes for existential safeguarding as an individual and collective good, and social and political institutions in the service of (all) citizens. *Consensus*, in terms of contracts, for example, and *convergence*, in terms of goals, tasks and cooperation, for example, are special forms of extended reciprocity (cf. E.22(4)). They have to comply with constitutional and human or social rights. They serve individual (and collective) existence and identity in freedom and must not violate the principle of mutuality. See D.23, F., especially F.1(0-3), F.1.2 [Social state; state goals], F.7.; E.9.

RECIPROCITY	
FUNCTIONAL DIMENSION	CONSEQUENCE
Legal principles	Equality: legal, sexual, voting
Social rights	Mutuality: benefits, obligations
Extension (social contract)	Work for fair wages, taxes for private & collective security & development

Table 2: Components of reciprocity

7. SATISFACTION OF BASIC NEEDS, COOPERATION, COMMUNICATION, SOCIALIZATION, JUSTICE AS COMPONENTS OF SOCIAL ASSOCIATION

1. Basic needs and their satisfaction: Social association includes (basic) needs and their satisfaction. Both show a neuronal-somatic substrate (in part somatic and vegetative neuronal, in part cognitive neuronal ["knowledge"]). Basic needs represent a bridge between "culture" and "nature", in terms of cultural patterns of satisfaction of needs (A.20) and physiological substrate. See D.0.3(2) [Distinction between basic needs, their individual development, and consumer goods] and F.1.2. I hesitate to accept Maslow's hierarchy of needs. I prefer a more *parallel* (and thus *simultaneous)* form of need development and need satisfaction.

Basic needs include *primarily:*

(1) Food, subsistence; gustatory components such as tasteful enjoyment.

(2) Clothing.

(3) Protection against bad weather; accommodation or dwellings.

(4) Rest, regeneration; the need for healing.

Considered as *social basic needs* can be:

(5) Love, sex; reproduction; family life.

(6) Child raising, child education, transmission of knowledge and skills.

(7) Communication and exchange with other people.

(8) Leisure time shared with other human beings, participation in feasts.

(9) Participation in group decision-making (political co-determination of social members).

(10) Need of recognition in the sense of social acceptance and mutuality (reciprocity). Depending upon one's culture, this need can be developed as a motivation for excessive and even abusive prestige.

(11) Basic needs include: encountering new challenges and new patterns, gaining *new experience* (e.g. creative behavior such as dancing, fine arts, verbal expression), but also being able to achieve something.– See E.14(4).

Basic needs concerning *safety and orientation* include:

(12) Familiarity with territorial environment, spatial experience.

(13) Need to have prediction and orienting knowledge (relating to the "future").

(14) Just regulation and resolution of conflict.

(15) Need for safety (cf. F.1.2, especially b)), the absence of an arbitrary threat to life and danger; need to feel socially at home, for harmony and for reconciliation. This might entail property and/or territory for use, or appropriation (food production and dwellings: Item (1) and (3) above)[18].

2. Cooperation: The principle of cooperation constitutes a basis for the *organization of living together and of work* in egalitarian and democratic societies. The division of labor, specialization, and synergy are aspects of cooperation. Cooperation goes together with phenomena of relation formation, convergence, reinforcement, internalization of a norm (Homans 1974 (1961):110), variety and enrichment in terms of content, efficacy, system formation and shared utility (even under conditions of competition). Correspondingly, cooperation contributes to the self-determination of the social group, to safeguarding the satisfaction of basic needs, to the organization of solidarity, of security and defense in favor of survival of the individual and the group, and of processes based on the division of labor. The relative contrast, violence and coercion is then more strongly – but not exclusively – characteristic of socio-evolutionary degenerations.

3. Communication: Communication brings about social association. Communication in a social group includes language and language acquisition (cf. A.5/6). Communicative comprehension presupposes a basic set of mutually known beliefs and values as well as rules of inference which are common to the communication partners. Grice's conversational maxims are, in principle, presuppositions of successful communication[19]. In a mo-

[18] For an alternative classification cf. Christian Bay, "Strategies of Political Emancipation", Notre Dame & London 1981: University of Notre Dame Press. Bay (1981:97f) distinguishes between *"basic physical needs"* (incl. sustenance and safety needs), *"community solidarity needs"* (belongingness, affection; self-esteem, social recognition), *"subjectivity needs"* (self-actualization, growth, development of a person). The latter two seem to be basic needs which refer to *identity*. Cf. Bunge 1989 (for example, pp.1-40): primary needs and values, serving *survival;* secondary needs and values, serving *health;* primary and secondary needs are 'basic needs'; legitimate wants (e.g., *love, advancement, security*) and tertiary values must not be fulfilled at the expense of other people's need. A quaternary value contributes to meet a *fancy*. Even a fancy must not be antisocial. Cf. F.7.

[19] Grice's conversational maxims: Relevance in communicative contribution; sincerity (the communicant may believe what he says; may want what he asks for; may intend what he

dern democracy, communication as a basis of decision-making and as individual participation includes critical mass media, which distinguish information from propaganda (cf. Naess 1966). Striving for corroborated information, i.e., for truth and verifiability, is a fundamental function of communication and serves survival of the individual and the social group.

4. Justice: Social space is also the *space of the legal regulation of conflicts.* This includes the regulation of destructive behaviors and destructive expression of feelings. The principles of this regulation are justice, i.e., equality of everybody under the law, safeguarding legal rights, i.e., laws are valid and are imposed or applied, and peace under the law, i.e., legal conflicts are resolved and the solution is acknowledged. The fixation of legal rules, the development of an order of proceedings (rules of procedure) and the regular recruitment of judges are important steps in social evolution. See F.1(3) [Systems criteria], F.1.1 [Domains of norms], F.1.2 [State goals]; F.2 [Obligation].

5. Socialization: Socialization is understood (a) as a process of appropriation and mediation, or transmission of social behavior and knowledge, i.e., particularly of norms, values and beliefs such as in the relation to world view, practices of acting and skills, and (b) as being a result of such a process. The contents of socialization are *taught* informally by the members of a household (primary socialization), or formally by other members of a settlement or community, possibly organized in schools. Socialization is a life-long process which also includes secondary socialization, for example, in one's profession or work. The result of socialization can firstly be understood as being factual action and behavior, and secondly as capabilities and/or as holding cognitive action schemata which organize action. The contents of socialization include systems of knowledge and beliefs of a social, natural and "supernatural" environment, as well as knowledge and practices of satisfying needs (cf. B.7(1)). If necessary, obeying and applying norms of action are reinforced by reward; the disregarding of norms of action is discouraged by punishment (deprivation). The means of *social control* in keeping social norms or standardized routines of action can be formal or informal.– See A.4, A.20; A.9; B.1, A.6, C.4(26); E.10(1), E.19.

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commits himself to; veracity (the communicant may try to say what is true); may not talk too much (digressing) and not too little (silencing); be informative; may have adequate evidence in support of what he maintains; may respect clarity, sequence; politeness; responsibility (after Akmajian & Demers & Farmer & Harnish 1990).

8. ROLE, ORGANIZATION, INSTITUTION: EQUALITY, RANK ORDER, INEQUALITY

0. Social structuring: Social association includes the structuring of social relations by means of role differentiation, organizations and institutions. A note on social stratification: *Egalitarian societies* are, in principle, equal with regard to power, resources, and prestige. *Societies ordered by rank* are unequal with regard to prestige, but equal with regard to power and economic resources. *Class societies* are unequal with regard to power, resources and prestige.

1. Roles: Social space is structured and differentiated *by roles:* private vs. public; during work vs. during leisure time. Roles include, for example, capabilities (skills), obligations, rights, and expectancies (also of other persons). Roles can be taken over consciously, can be assigned more or less by force by other persons, or can be pre-structured by means of the context of a situation (for instance, an accident).

2. Role reflection (cf. D.20, E.13(3)): *Conscious* role reflection can broaden the individual ability of choice and action which is perceived or imagined by Man. The reflection of a role, or even the creative organization of social space can include the conscious consideration of the following points of view:

(a) Control, buffering (safeguarding oneself and other persons against abuse; the methodical reduction of mistrust).

(b) Balance [e.g. criteria of justice, objectivity, search for truth, social sense, perception of chances (D.18, F.1(0-1)[Conscience])].

(c) Kind of participation in social space (e.g., participating, observing, staying out of something or switching off).

(d) Efficiency or constructivity (goal, task, problem-solving; result or achievement; social support).

3. Organizations or institutions: Social space can be structured according to *forms of organizations* which nearly always have the property of *institutions* (permanence of positions, tasks, membership; see below). I distinguish between: (1) *Kinship* organizations, e.g., family or domestic group, lineage (descent from a common, known ancestor) or clan (descent from a supposed, mythical ancestor). (2) *Voluntary and non-voluntary* organizations and *interest* groups (e.g., non-voluntary ones based upon ascribed characteristics: age-sets, unisex associations, army; and voluntary ones based upon achievements or interests, perhaps in combination with ascribed characteristics: occupational associations, special interest groups, regional and ethnic associations, “secret societies”). (3) *Territorial* or *political* organizations for maintaining order and resolving conflicts (types of

political organizations, i.e., bands, tribes, chiefdoms, states; types of conflict resolution: e.g., tribal council, courts of justice; feuds and warfare). See Ember & Ember 1981(3rd ed.).

Organizations can show an *internal rank order* (beginning social stratification in social evolution). Such organizations might consist of a group of people who participate in rights *collectively:* in property, in resources, in privileges, in responsibility (definition of a *'corporate group'*). Social space and social organizations are legally and ethically structured and regulated by *normative rules* (F.1; D.0.2/0.3; cf. A.20; A.11). With growing social complexity there is an *increase in institutions to which positions and tasks are permanently assigned* (cf. B.10(3) [Institutions in social evolution] and B.11(2)).

4. Equality and rank order: These phenomena concern the social processes of prestige and recognition. Individualization, individual capabilities, achievements and property do not necessarily cancel equality, but can lead to rank order, i.e. to differential prestige in the sense of a socially differentiating evaluation. This might even be the case for such biologically fixed facts as sex differences. In egalitarian societies, differences in status are based only on age and sex.

9. SPACE OF NATURE AS A SOCIAL SPACE

Space of nature as an *ecosystem* is determined by climate, quality of soil, flora, fauna and geochemical atmosphere. Space of nature is *used* and *changed* by Man, by means of settlements, the production, primarily, of food, but also chemotechnical products, the exploitation of mineral resources, the generation of energy, and by transport and traffic. The active use of space of nature is contrasted with *adaptation processes* of Man to peculiarities of space of nature as environment. Cultures are partially characterized by them (e.g., the cultures of the Inuits, Tuaregs, etc.).

Organisms, especially Man, are in exchange with the environment. *Cycles of energy* include the food-and-waste chain, different chemical substance cycles, population dynamics of Man, animal and plant, partially in context with epidemic cycles. On the basis of experience, space of nature enters the conscious as "environment" and also as "social space", which becomes *conceptualized* and in which one *consciously* intervenes.

In terms of space of nature, social association is subject, primarily, to the following conditions:

1. Health factor:

(1) The *functional balance* of the oxygen atmosphere (its reduction by smog, plutonium, etc.), soils, vegetation, waters, and food chain is of fundamental importance to health.

(2) *Noise* or acoustic resonances can have a health-reducing effect (cf. the discussion of short-term memory, C.2.2.2(5), C.4(28)).

(3) *Visual monotony* reduces fantasy and the quality of life (urban architecture and landscape planning; cf. "monotony" under socialisatory points of view in E.10).

(4) *Population density* as a stressing factor. This includes, in urban settings, primarily the control of the factor of hygiene (drinking water; removal of faeces and garbage, etc.). In addition, there is the problem of the control of aggression.

The *ortho-functional* viewpoint of *health* is the starting point for discussion: sufficient blood circulation, stress reduction, hygiene (control of epidemics), the quality of drinking water, poison-free food, regenerability (regeneration, rest), peacefulness (reduction of aggression). See B.11(3).

2. Territorial factor:

(1) "Catchment area" as a construct: The following cultural anthropological experiment of thought may serve as an introduction. We are dealing with a hunter-gatherer culture. A basic theoretical construct from cultural anthropology or socioarchaeology is the *territorial catchment area* of a social group. This catchment area can also be the space of the appropriation of nature by a social group. The catchment area is binding in territorial and social terms. Limiting features can be, for example:

(2) Walking distances for work or food production, calculated in days, and possibilities of spending nights in camps, correspondingly.

(3) Hunting and cropping cycle: Continuous appropriation of food in nature implies the consideration of *seasonal cycles* in accordance with climate or weather. This refers to hunting, harvesting, pasturing cycles, as well as to the behavior of animals within the territory of a socially emerging catchment area.

(4) Camping cycle: Camps or temporary huts are built in accordance with the seasons and cycles of hunting and harvesting of berries, etc.

(5) "Carrying capacity": The territorial catchment area of a social group shows a certain amount of yield in relation to animals and botanical products which correspond optimally or maximally to a size of population which can be maintained. To increase the size of population which can be maintained thus depends on the intensification of food production, or on the enlargement of the catchment area. The pertinent theory is, in addition to variants, even in biology, Carneiro's *"Carrying Capacity Theory"* (Car-

neiro 1970; cf. Probst 1985; Hinz 2002) which tries to explain the *development* of sociopolitical organizations up to state formation. Population growth and population pressure become central variables in the theory. Further variables are: scarce resources, the problem of their procurement and (re)distribution, the formation of alliances (e.g. cooperation) and / or war (robbery, for example).

(6) Centrality and rule: The development of a catchment area includes the formation of a *central place* as a center. Catchment areas can be *enlarged or absorbed or* they can remain *independent.* The formation of alliances and rule in the sense of territorial expansion is contrasted with the processes of isolation of territories and populations. Both of these processes are relevant for the formation of settlements, communities and perhaps even markets (centers of distribution), for identity formation, cultural development and resistance formation in relation to the emergence of differentiating *frontiers and gradients.*

(7) Summary: The *familiar environment* is the catchment area. In the early evolution of mankind we are concerned with "pedestrian cultures". Pre-conditions: time budget, camps (accommodation), food (incl. water) (also "stock" or "supplies"), communication and relative accessibility. As seen in terms of traffic and economic geography, this is even true for modern societies with different technical and demographic parameters.

10. EVOLUTION OF SOCIAL SPACE: INSTITUTIONALIZATION, TERRITORIALITY, INEQUALITY, RULE, RESISTANCE

The short discussion of social evolution in this context of the argument is descriptive and empirical, whereas the ideas on planning a community (B.11) are normative and refer to the future. This outline is idealized and simplified.

1. Political decision-making: The primary political experience of social space by individuals is abstracted and generalized: *Discussion, consultation and decision-making* are organized and *institutionalized* in temporal, local and social terms. The membership of the discussants is fixed on the basis of recruiting characteristics, e.g. age, adults, or according to sex, perhaps cyclicity: election to offices or positions, etc. for a limited time.

2. Social space ethically and legally determined: The obligations of acting and rights (to settle, to hunt, etc.) are imposed and controlled; solidarity is organized as an obligation and as a right.

3. Formation of institutions: The principle of utility formation, especially sharing, commonality, participation, practical solidarity and active support,

confidence building, risk limitation, distribution, production, but also conflict avoidance and conflict resolution, of control, and of establishing and enforcing validity, are apparently *functions underlying* the formation of institutions. The *generalization and specialization* of the functions of existing rules or organizations take place in evolution according to Flannery (1976, originally 1972). Social affiliation, or feelings of belonging together, and defense in the face of attack and danger, can have institution forming effects. The *structuring of inside, (more) distant and outside,* in social and spatial perception is organized by means of *classificatory systems:* e.g. kinship or lineage systems. In modern states, the ideas of the nation as a community in solidarity, and of the social and legal state, fulfill this function. In complex societies (see below), there is the formation of the dysfunctional despotic institutions of *exercising terror* and of *excluding* certain people *(formation of stratification and classes)* by which the principles of sharing and participation can be limited drastically.– See B.8(3).

4. Patterns of socialization: Socialization can be formalized in part by education at school which goes beyond primary socialization in the family. New patterns of identity and new forms of socialization are concomitant variables in the formation of complex societies. Man is conceived as being differently bound into a network of social and cosmological relations: as a subject in contrast to the rulers, as only a dependent labor-hand (or farm-hand) in contrast to the lord or owner, as Man in contrast to the gods, who are served by the former, etc. Enlightenment and social movements in modern times mark a horizon of consciousness which is directed against these types of dependency and unfreedom of the more complex forms of socialization, and which seeks to make social complexity compatible with individual freedom.

5. Expansion of the territory of social space: Social space is socially and politically *reduced* by fission or *expanded* by the (violent) incorporation of other villages, perhaps by the formation of joint bodies of consultation and of decision-making. New criteria of participation may be valid and an internal rank order (of persons, offices, institutions) might be inaugurated.

6. Spheres of interregional exchange: The combination of "different" social spaces creates new social spheres. This includes the spheres of interregional exchange, as in the case of Mesoamerica (cultural area of Mexico and the northern part of Central America), in which such minerals as obsidian, magnetite, ilmenite, and hematite are exchanged with other goods such as shells *(Mollusca)*, probably feathers, honey, furs, salt, etc. In this particular case, the objects exchanged are themselves magnetic and have a corresponding effect on Man. In the Old World case of bronze and iron, this is valid to an even stronger degree. The presupposed organization is

the trading expedition, for example. The formation of early economic spheres can be explained: *scarce* goods are exchanged for scarce goods, and the value is, in part, direct attraction (minerals and ores: "remagnetization"). The "exchange of goods" includes women, too, following Lévi-Strauss: As a result, *relations of alliance of the respective elites* can be established. Cultural patterns and innovations can be adopted easily by means of this mechanism. Economic spheres become *cultural spheres*.– See B.1(3) and B.9(2(5)).

7. Inequality, rule (power): The emergence of social inequality and central rule is implicitly contained in this strongly simplified (and rather speculative) outline of an empirical model of the evolution of more complex social forms. Point 6. contains the factors for these two phenomena: the emergence of (1) *economic monopolies (e.g. scarce goods; property of production facilities; know-how; redistribution),* of (2) *agencies of codifying social values and norms,* of (3) *differential prestige.* The emergence of (4) sociopolitical, individually directly perceivable *violence or violent acts* by means of (para)military organizations, for example, has to be added. The pristine states (e.g., ancient Egypt, Mesopotamia, the Indus valley, ancient China, Mesoamerica, ancient Peru, etc.) as well as non-democratically regulated states are despotic systems. They are based on population growth and population pressure, on permanent *dependency ascribed by birth* with regard to property, work, and rights *(socially stratified or class society).* The hierarchization of places and the authorities of decision-making is characteristic. (Normally, the concept of state implies at least four levels of decision-making.) Territorial rights change in part from the right of use (usufruct) to the right of *private property. 'Power'* of persons or organizations is *defined* as the ability to coerce other persons to perform certain acts against their will.– See Hinz 2002: 1-25 [Emergence of the state].

8. Concept of rule explicated: Rule is institutionalized (and *territorially* centralized) power. Rule is to be analyzed into the following conceptual components, in terms of descriptive and prescriptive political sciences: (1) *Legitimization,* e.g. elected, controlled, obliged to give account, with a mandate of the people ["all power originates with the people"], constitutional; this includes "legitimization" by general, equal and secret ballot. (2) *Control of powers,* e.g., separation of powers in legislative, executive, jurisdiction and independent inquiries into criminal acts; elections and more direct participation [referendum]; political, juridical and democratic control of the police and the military. (3) *Legality,* i.e. rule conforming to norms of law (constitutional rule). Comparatively, other historical forms, especially of legitimization or rather of *("uncritical") legends of legitimi-*

zation, include charismatic kingdom, rule as mercy conceded by God, dynastic descent, tradition, etc.

9. Force or Violence: Force can thus be understood (1) in manifest terms as organization or as coercion (also in a neutral meaning) or as open terror, (2) in latent terms ("structural violence") as deprivations or disadvantages, with regard to health or education, for example. Corresponding to the form of rule and its conditions of application, rule can be "legitimate" or "illegitimate". Suppression or peace are the alternative functions of the monopoly of force.

10. Resistance: Resistance against illegitimate rule or violence, for example, can become manifest: (1) spontaneously as expression, affect or selective assassination of the tyrant, or (2) as a program and method, with strong collective goal-orientation, such as a liberation movement, a civil rights movement and a rebellion (civil war). Resistance is dependent on organization, information, the capability of forming an alliance, of thinking in alternatives and the ability of goal-programming.

11. PLANNED SOCIAL SPACE: CRITERIA FOR COMMUNAL ORGANIZATION

1. Conscious communal organization and its basis: A community can be planned or organized *consciously* as social space in the spirit of democratic social philosophy. The *organization of a community includes the participation of its inhabitants.* The constructive basis for this consists primarily in rights of freedom, social and legal equality (in the historically relative situation of the Third World, for example, not necessarily immediately economic or role-specific), critical solidarity, i.e. to intervene in favor of the needy, and rights of information. Reasonable communal organization includes the promotion of *community awareness* and of informal social behavior and social consciousness. See D.24.

2. Satisfaction of needs and communal organization: The satisfaction of the *needs* of every co-citizen, *according to B.7(1),* and its social or general organization are the focal point of communal organization. Such a general organization can consist of permanent offices and of (economic) corporations. Included as structural norms are: a low rate of unemployed persons and of criminality; supply: goods and services (transport, commerce, energy, water, education, culture, health, taxation, vital statistics, police, etc.), balanced budget. The structural basis for the satisfaction of needs includes access to jobs and rights at the workplace.

We place special emphasis on basic needs and their translation into spatial and functional terms corresponsive to the organization of daily life

within a community. Communal organization thus includes the problem of how to form reasonable spatial and functional relations of living (dwellings), supply, production or work, environment, and rest or leisure (incl. "new stimulations" such as cultural events, etc.): for example, spatial integration or segregation of these functional components.

3. Organizational concepts: A reasonable concept of *"health"* could be at the center of attention in the organization of a community. What destroys and prevents health gets excluded. In the same vein, G.H. von Wright has based his philosophy of human welfare on the concept of health. Other concepts which are not followed up here could, for example, be: "Learning, innovation and *development";* "social sense and *identity";* cf. E.19 (Thesis 4 among others). Note that all concepts emphasize consciousness or rather community awareness.

4. Focus of integration: The community as a *focus of identity and integration* first of all means: rights and opportunities for participation (and co-determination), cycles, such as cycle of feasts, of bodies of communal discussion and decision-making, the further development of individual identity, and of individual needs and leisure (communal offering of events). Integration is predominantly characterized by solidarity and support which one can give to others or receive from others, and by the sense of belonging, or by membership. The sense of belonging or membership is characterized, for example, by living (dwellings), work, leisure, participation rights. Organizational concepts, as mentioned in Item 3, can also develop into focal points of integration.

12. SUMMARY

A. Conceptual explication of "social association"

Social association has the following features. It is:

(1) *Synergistic:* cooperation, solidarity, reciprocity, (political) participation.

(2) *Spatial:* visible social space such as the household, "village" or settlement, territorial catchment area (known by exploration, use, and remembrance).

(3) *Focal:* place of action, interaction, work (goal-oriented), discussion and decision-making (topic, goal).

(4) *Interactive and cooperative:* harmonizing one's own and the other person's needs.

(5) *Functionally differentiated:* in the sense of goal-orientation, task-orientation, satisfaction of needs or support; moreover, in the sense of the emergence of institutions and social organizations.

(6) *Classificatory* of sex, age, group membership, role or profession: the kinship system as a system of terminology, a system of kinship group(s) (e.g., clans, lineages). Social association forms *social semantics.*

(7) *Rule forming:* behavior and customs or routines become, to a large degree, normatively standardized.

(8) *Pattern forming:* social association leads to the formation of styles and to the organization or development of *culture.*

(9) *Consciousness forming:* conscious social identity as a sense of belonging or as membership; to feel familiar or at home.

(10) *Socializing:* social association serves the raising of human offspring, the acquisition of language, social rules, knowledge (worldview) and skills, the safeguarding of physical survival.

(11) *Sexual:* the formation of the nuclear family, kinship, marriageable population. Social association generates *population.*

(12) *Existential:* social association also leads to ego-existence, in economic and subsistence terms, and to one's personality (cf. E.19(3)).

(13) *Intergenerational:* social association accomplishes the care of human offspring and the transfer of this function of care onto the next generation, as well as vice versa, with regard to old and needy people (intergenerational reciprocity).

The *relationship between individual and community or society* is characterized by generalization: Generalizing tendencies arise from participation in institutions and processes of education and socialization, from mass media, institutions of jurisdiction, of political decision-making, of the military organization of security, and, if applicable, of religious praxis, etc. Individualizing tendencies originate from the formation of consciousness by means of education and individual experience, from identity development (E.19), from factual action, innovations and particular achievements.

Social association is submitted to the criteria and rules of social binding *and / or* of social decay.

B. Social binding criteria

The ideal type of *social binding* can include the following criteria:

(1) Ability for cooperation.

(2) Effects of problem-solving (experience of efficacy).

(3) Experience of solidarity (experience has been self-made or is reported and is second-hand): The group supports mutually in protection and safeguards survival. Positive success is rewarding or reinforcing (in the sense of social psychological learning and balance theories).

(4) Potentials of existence (work, land); shared perspective of the socially associated.

(5) Common culture, language, habits of living and customs.

C. Social decaying criteria

The ideal type of *social decay* (also of *fission*) can include the following criteria:

(1) Permanent conflicts which remain unresolved. This is especially true for questions of social identity (culture, language, religion; see (5)).

(2) Incompatibilities: animosities, negative trivia, deficient problem-orientation and problem-solving capability.

(3) Unfriendliness as a permanent atmosphere: the negative affect is punishing and socially demotivating (again in the sense of social psychological learning and balancing theories).

(4) Missing potentials of existence (work, land); poverty, misery.

(5) In complex societies: violence, social normative dogmatics, unfreedom, dysfunctional personal power, inequality which is not sufficiently buffered by program, political fighting and basic security: the step towards civil war.

D. Development to a humane form of life

To re-establish social association as a humane and autonomous form of life means, programmatically, in modern complex societies according to Galtung [Freedom & identity; 1980/V:406]:

(1) The removal of *exploitation* (i.e. asymmetrical work and interaction relations).

(2) The removal of *mental dominance* over the governed.

(3) The removal of *fragmentation* (i.e. the prevention of association and solidarity among the governed).

(4) The removal of *marginalization* (i.e. the exclusion of the governed).

E. (Normative) consequences for social praxis

(1) In modern Western democracies, the principle of the *legal and social equality of everybody* remains true. As a result, inequality can (and must) be fought against. Striving for more economic equality as a larger degree of justice is possible. How far this is viable in praxis, is open. To share gains is probably undisputed in modern advanced economies.

(2) The principle of symmetrical reciprocity-B, solidarity, the enablement of the individualized formation of sexual pairs, and of the individual foundation of families, remain the *basis* of social association.

(3) Sexual despotism is to be avoided and is to be fought against: e.g., rape, pedophilia, coercion to bear children, i.e., to the benefit of the potential mother, respecting the right of self-determination, including the right to abortion, has to be guaranteed. See D.0.3(3) and I.0.2; G.1. Items (1-3) also form the basis of *informal* social behavior, e.g., natural friendliness and a social attitude towards the destiny of the other (cf. A.19).

(4) Apart from individual development and the satisfaction of basic needs, education, the ability to communicate, and critical information ("enlightenment") are emphasized in social association within modern societies. Everybody has a *personal right to self-determination and self-realization* (cf. D.0.2(1)). For that there are existential preconditions (cf. D.23). The continued existence of a democratic and highly technologized society demands informed, well-trained and responsible citizens who are capable of decision-making.

(5) Social association includes *how to deal with individual and social differences:* Legality, tolerance and the obligation to the "rational model" of the responsible citizen are the basis thereof in our Western societies (cf. E.31, especially (4)). These three characteristics form a *balance*. Mutual respect is basic.

References: B.1: 72.; 89.; 100.;135.; 95.; 117.; 141.; 101.; *B.2:* 130.; 105.; 52.; 53.; 54.; 55. *B.6:* 72.; 89.; 141. *B.7:* 6.; 77.; 78.; 56.; 111.; 63.; 170.; 118.; 119.; 86. *B.8:* 42.; 116.; 72; 89. *B.9:* 46.; 126. *B.10:* 46.; 74.; 72.; 89.; 42.; 118. *B.11:* 176; 56.; 57. *General:* 8.; 29.; 80.; 116.; 139.; 56.; 57.; 77.; 78.; 101.

C. PHILOSOPHICAL PROBLEMS OF COGNITIVE NEUROBIOLOGY

0. AN OVERVIEW

Systematic Anthropology represents the idea of the unity of Man, inclusive of an investigation in human biological terms. As an example, cognitive neurobiology is presented here with its task to survey the neuronal mechanisms and neuronal correlates of meaning formation, consciousness, memory and knowledge. See the sketch in A.8 [Thought], and A.22(B/C). In detail:

Thinking is modeled as a process of information processing. Some notes on neurobiological *methods and concept formation* follow (1.). A short list of the philosophical problems of cognitive neurobiology is presented. The results and hypotheses of the following *domains of problems* are dealt with briefly (2.). The *formation of meaning* in perception and memory is outlined (2.1). *'Consciousness and becoming conscious'* includes a componential analysis of consciousness together with an open list of (some) phenomena of consciousness. An outline on the hypothetical nerve of becoming conscious, on functional models of consciousness-forming processes and on hypothetical short-term memory in rhinal sulcus follows. Rhythms of brain waves correlate in part with intentionality and the formation of cognitive results (2.2). The *biochemical features* of cognitive and memory-forming processes concern, for example, long-term memory (fucose); the translation of motivation into action (dopamine); the phosphorylation of the information-transferring components of the cytoskeleton of the cell (neurofilaments, microtubuli associated proteins) by ATP [adenosine-triphosphate]; excitation, synaptic formation and encoding (pyramidal cells, glutamate; dystrophin which recruits acetylcholine and forms synapses); increased blood supply and glucose metabolism as indicators of cognitive activity (2.3). An outline of *cognitive schemata and knowledge* follows. Whole scenes are stored. This forms the basis of episodic memory. The schemata include *beliefs,* knowledge of reality, plans and motor schemata. It is hypothesized that semantic schemata or their components are stored in cerebral columns. This would imply, at least partially, a *semantic interpretation of the brain* (2.4). On the concept of schema, cf. also C.3.2(3) [Introducing an electrophysiological definition] and, as an example, I.7.2; cf. A.III/IV [Concept of a schema].

Finally, the philosophical position of *"mentalism"* (irreducibility of mental or intellectual structures) with its possible reduction to neurophysiology

is discussed (3.). In summary, the most important hypotheses and results are listed (4.).

1. ON METHODOLOGY, MODEL BUILDING AND CONCEPT FORMATION

1. On models: In cognitive neurobiology, *models* are built in order to describe and explain cognitive structures and processes. A model selectively represents a segment of reality – relevant in terms of the problem. Underlying the model are elicited *data:* neuroanatomical, neurophysiological, biochemical, biophysical, and cognitive-behavioral ones.

2. Models of cognition as information-processing: Models are meaningful and tried and tested if they describe and match cognition as information processing (incl. the formation of information)[20]. For that we need:

(1) Organs of information reception (for example, organs of perception) which communicate with the external world.

(2) Storage (organs of memory) which store information intermediately or permanently.

(3) Processes which consist of perception, learning (storage) or retrieval (recall). Building upon that: conclusion, inference (of covered, obvious, probable features or events), construction (from components) and analysis. These processes correspond partially to *organs of information-processing.* The motor processes of speech, locomotion, grasping or manual construction correspond to *effector organs.*

(4) The *processes* can, and have to be, more or less strongly *goal-directed.*

(5) Cognitive information is a neuronal code-definite (also association-coded or convergence-coded) representation; *for example:* (a) an image or a visual scene, (b) a spatial – also non-visual – representation, (c) a verbal description, (d) a motor and goal-determined construction or movement in an external space, (e) a functionally completed configuration (i.e., feature coherence according to the different levels of function and object). This re-

[20] Cf. e.g. Stachowiak 1969; Schank & Colby 1973; Rolls & Treves 1998; Rolls 1990; Gray 1993, 1995. Despite many insights, Bunge's report on *psychology of information processing* (in: Bunge & Ardilla 1987:105ff) is not recommended because of missing constructivity and factual-material adequacy. For the report on *biopsychology,* relevant information would have been desirable instead of silencing the massive human sacrifices produced by *callosectomy, amygdalectomy* (cf. hereto Rolls in: Aggleton 1992:158) etc. and the corresponding scandalous health and science policy, especially in the USA. However, cf. his clarifying "Treatise on Basic Philosophy", vol. IV/1979:174, 143.

mains true even for parts and components of the context under consideration.

(6) *Neurobiological* basic *concepts* are to be assigned to those of *cognitive science*. An example is the outline in C.2.2.2(6) [Functional assembly of information flow between area 35 and mamillary body].

3. On methodology and concept formation: The following notes on methodology and concept formation in cognitive neurobiology highlight some characteristics:

(1) *Staining* of neurons enables the discovery of connections as well as the *mapping* of receptive fields.

(2) By studying the *stimulation, loss or paralysis* of neurons and their connections, it is possible to contribute to the assessment of numerous facts, conceptual distinctions, and hypothetical-theoretical constructs.

(3) The ability to *study simultaneously a multitude (for example, >600) of single neurons* has led to a *fundamentally new access to the neuronal correlate of thought, perception, and motivation, in the context of meaning and action.* Due to ethical reasons, experiments are not run with humans but with other primates instead. With the necessary precautions, it could be said that one can "nearly look directly into thought". One can not only stimulate single neurons, but can also register and record them differentially to perceptive external stimuli and reactions, and correlate them between different critical neuronal localities. An experimental study of *single neurons* permits us to assess *functional differences* (cf. Vinogradova 1975, and especially in: Weiskrantz 1978, Rolls 1990, 1998 (and in: Aggleton 1992), Fujita, Schultz, Gallese as good examples). Postulated functions which are derived from such studies of single neurons are *inferred* and theoretically *interpreted* despite this rather direct access. In these studies, concept formation or *semantic analysis in comparisons of stimulus and response* plays a central role. See C.2.1(4) on the concept of *"stimulus"* and C.2.1(5) on the concept of *"response"*.

(4) In general, structures and functions of neuroanatomical, biochemical and biophysical components, or, rather, units or processes of the brain, are *decoded* one after the other, in the sense of a cybernetic *black box.* This becomes accessible for the time being only more or less *indirectly* (by means of input-output comparisons, for example, after the dissection of nerves or in conjunction with image-producing techniques). The formation of dynamic process models always remains a goal which data and hypothetical constructs are referred to.

2. DOMAINS OF NEUROBIOLOGICAL FEATURES: HYPOTHESES AND RESULTS

Philosophical problems of cognitive neurobiology include:

(1) The foundations of the semanticization (formation of meaning) of neural processes (C.2.1).

(2) The conditions of thought processes and of memory structure as problems of empirical brain research; the neurobiotic substrate or correlate of perception, thought, and memory (C.2.3, 2.4; cf. 2.1).

(3) The neural basis of consciousness (C.2.2).

(4) The correlation between different separate sciences in accordance with the structure of reality, concept and theory formation and scientific language: for example, the *translation* of structures of behavioral science into those of neurobiology and endocrinology or vice versa. With reference to the *internal structure of the neural system,* the concept of translation can be understood as *recoding* or as *coupling*: a change in chemical substances, in a biophysical form of transmission, and in the function of chains of cells synchronized, as well as a possible coordination or facilitation of information. This means, our attention is drawn here to the potential *convergence of the sciences of nature* [anatomy, neurophysiology, biochemistry, biophysics], of the *social sciences* [interaction, communication, standardization] and of the *mental sciences* [information, semantics, cognition]. See C.2.3(2), C.2.3(4); C.2.4; C.2.2.2(2/4); C.3.2(2) *[Translation as statement of equivalence];* cf. B.2; F.6; C.2.1 remains fundamental.

2.1 FORMATION OF MEANING IN PERCEPTION AND MEMORY

The formation of meaning (semanticization) is characterized and explicated in propositional terms. We deal primarily with the production and/or identification of a pattern. See C.2.4 [Pattern learning], C.3.1(2(1-2)); C.2.3(1/4) [Encoding].

0. Thought and information-processing processes have, biophysically, the property of *brain waves*; i.e., these waves convey meaning (are semanticized). How does a wave acquire meaning? The following answer is a strongly simplified outline which includes only a few principal and central features:

1. The neurons of the organs of perception are systematically arranged, e.g. the eye – the retina – in central and peripherally azimuthal terms, i.e., with a representation of angles [of vision] in concentric circles: *carto-*

graphic theory of material receptor neurons and of *stimulus reception* (cf. Allmann 1982).

2. The neocortical memory organ(s) contain(s) neurons of storage which partially correspond to the neurons of perception: the *cartographical theory of information storage.*

3. The motor muscular reflexes of the eye correspond to the *control of attention:* light reflex [of the eye], accomodation reflex, fixation reflex and convergence reflex which *intervene as or correspond to focussing in the information-forming process* (cf. Kahle 1991/III:336f.; C.2.2.2(3): Ar. 24, 29; Ar. 48 [Focussing as a component of consciousness]; see Note 5).

4. Stimuli are bundled up or rather focussed or refer to a spatial field, i.e., they build up a spatial image of the external world. Thus, visual stimuli are light reflexes of objects in the external world which are differentiated according to color, brightness, intensity, form, and movement. One should note:

(1) The external world is operationally redefined as "stimuli" (cf. Sokolov).

(2) A stimulus biophysically induces an oscillation or a wave in the meaning-specific neurons of perception (see 6., especially 6(1) below).

(3) Actually perceived "stimuli" are compared to patterns which are stored in the memory (*"neuronal models"* according to Sokolov). The comparison takes place, for example, in the subiculum in conjunction with the rest of the limbic system. The mismatch in the subiculum activates inhibitory signals in the hippocampus (cf. Gray and Smythie according to Wieser 1992). Patterns include their *"neuronal detectors".*

5. The content of a reaction ('response') thus corresponds to:

(1) the *selection* of neurons of perception (by stimulation), plus:

(2) the converging switch of relay or monitor neurons *(guiding attention,* for example, the vertical meridian in coupling with vestibular syntheses), plus:

(3) comparison with *remembered* patterns (see item 4(3) above).

The result is a structure or part of a structure as a representation; also called *'spatial image' ('scene')* or *'pattern'* (or 'part thereof').

6. Semanticization of a neuronal oscillation (or of neuronal oscillations), in strongly simplified terms, consists of:

(1) the *specifity* of the "stimulated" neurons of perceptions *with regard to sense modality and property discriminated;*

(2) the co-activation of a multitude of neurons, explained in paragraphs (5(1-3) above): generation of a *pattern;*

(3) the *fiber relation* of the neurons of perception and the neurons of the relay and memory organs; the partial *conservation of perceptual data* and

their *categorized* and partially *episodic* (referring to contexts of events) *form of data.* These fiber connections are the basis for the *relation or interaction* of the central nervous system (CNS) with the *external world,* via the added wiring of the periphery (in the case of the visual system) or else the peripheral nervous system (PNS): the appropriation of the external world, the build-up of an internal model of the external world, with the production of focussed spatial images or scenes. *Feedback* and *comparison* are basic to identification.

(4) As an example, the complexity of visual information formation and processing can be understood on the basis of Nelson (in: Arbib 1995: 1025 / Fig.1 [according to Ungerleider et al])[21].

(5) With regard to *motor* modalities, goals are added by means of which semanticization can be determined in the sense of a *procedure* (goal motor system = pattern of movement of body (parts) in [represented or mapped] space + goal as a pattern of the state to be achieved (= anticipated result); cf. C.2.2.1(1) [Intentional].

(6) The question of *amodal* codes (Aebli 1981/II:290ff) remains open. They are possibly a result of the *leveling of [actualized, E.H.] schemata to systems* (Aebli 1981/II:198ff). Systems, topography ("gestalt"), relations (sequences, functions, intentions, causality), events and transformations can be represented, and this plays a central role in problem developing thought. The 'propositional' code is *conceptual and consists of poly-modally, associatively coded features.* See C.3.1(2(2)) [Concept formation on the basis of noting invariant features when comparing different items, objects or events].

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[21] According to Zilles & Rehkämper ("Funktionelle Neuroanatomie", Berlin 1998³:139ff: Springer): *Retinal cells* consist of interneurons (contrasts formation) and projecting ganglia cells which are directly connected with the receptor cells (color, form, brightness, direction, movement differentiated). Relay within the *organ* of the corpus geniculatum laterale (magno-cellular: motion and large objects; parvocellular: form, color of objects). In the *analyzing organs* V1-V5 (reciprocally connected), the visual field and differentiated functions are distributed into separate channels (from V1 = Ar. 17 via V2), and are processed anterogradually (V3 / V3A / VP = form, V4 = color, V5 = movement); two parallel streams ("what-system" and "where-system") to V4 / V5 and to *organs of convergence* for further contextual identification (e.g., inferotemporal VA3 [Pandya & Yeterian] or TE and parietal areas). The data of perception and remembrance are categorized, compared (e.g., in hippocampus and subiculum) and *contextualized in scenic-episodic terms* (in the mamillary body, for example; remembered episodes are conserved as such). The retino-tectal system mediates reflex-like eye and body movements for the fixation of moving objects. The accessory optic system registers proper movements of the body relative to an unmoved visual field. The retino-pretectal system mediates pupil and accomodation reflexes. The retino-hypothalamic system functions as a bio-clock.– *Attention and goal-orientation* (cf. C.2.1(3) above) *are active, selective and buffered.* They are not only based on reflexes, but form a system of motivation of its own (cf. e.g. Schank & Abelson 1977; Posner 1993; Gray 1993; Stachowiak 1969).

(7) Furthermore, *social interaction or exchange* leads to the distinction of prototypical or basic semantic-pragmatic functions [e.g., of *speech acts*, A.6(5-6), and of *social categories,* A.6(0); of *needs*, B.7(1); of *goals*, A.3; of *emotions,* A.9]. See A.5(4)). Social interaction as experience, i.e. as doing-it-oneself and/or as observation (cf. Gallese) underlies and "precedes" interpretation. Social interaction and the basic functions mentioned form part of learning (A.7) or socialization (B.7(5)) and, thus, of memory schemata (cf. 2.4). Exchanges become predictable, intentional, and comprehensible.

For higher order processes of meaning formation like concept or theory formation, cf. A.8. The scene or episode is a source of complex meaning formation, especially in comparison with other scenes. See C.2.2.2(6), C.2.4(1), C.4(15) .

2.2 CONSCIOUSNESS AND BECOMING CONSCIOUS

2.2.1 Essay on a componential analysis of "consciousness"

1. Property Matrix: I propose the following *components* which appear to coincide with the daily life concept of consciousness on an intuitive basis (Fig.1).

Explication of the following Property Matrix:
? = Categorization under "stronger" possible. The left column can be interpreted neuronally:
Awake = Activation (such as by the hormone noradrenaline from the locus caeruleus upwards)
Intentional = "Readiness potential" in the supplementary motor area, as an example; the potential is activated shortly before a self-initiated willful movement; the translation of motivation into action in nucleus accumbens (dopaminergic).

CONSCIOUSNESS	**Weaker**	**Stronger** ("sustained")
Awake (sensory)	Noting, perceiving; "remembering" (?)	Feeling pain
Intentional (motor, cognitive)	Initiating, manipulative-correcting; thinking / searching (?)	Learning, controlling, planning

Fig. 1: Property Matrix of "Consciousness"

2. Functional localities: The following *list* of functional localities and neurophysiological properties can be assigned informally to the components just outlined. It consists of an open, non-exhausting *outline of (partially automatized) phenomena of consciousness:*

(1) Wakefulness: ascending reticular activating system via tractus loci caerulei (cf. Morrison et al, 1979, in: Science 205:313-316): to prefrontal; before that, subcortical and temporal (also hippocampal) branchings; from prefrontal to parietal and occipital; branching from prefrontal to hippocampal (cf. Fallon & Loughlin in: Jones & Peters (eds.), vol. 6, 1987). The removal of the locus caeruleus is considered to be the same as the removal of consciousness (cf. Jouvet 1983; Hobson 2000 / 23 [no.6]:812/813 and M. Holms therein :845).

(2) Attention: retinal fovea centralis (spot of sharpest vision; area 17/18 [visual vertical meridian]); oculomotor reflexes (see below, relay to cingulate cortex and to area 48).

(3) Intention of action, goal-directedness (differentially correlated potentials, preferentially within the alpha-range and gamma-range; neuronal convergence, cf. C.2.2.2(6) and C.2.4(4) Gallese 2000; F.6.4 (consciousness as "intentionality")).

(4) Decision, action: cf. C.2.2.2(4).

(5) Pain (in part defined as reaction: avoiding behavior; field of pain in the cingulate cortex; cf. C.2.2.2(3)).

(6) Balance, equilibrium: motion and statics (e.g., vestibular organ; cerebellum; thalamus; parietal cortex (area 3a, 2v), cingulate cortex: see below).

(7) Comparison / contrast: model of the subiculum; arc of Papez, limbic system (see C.2.2.2(2) and F.6) [*Core model* of consciousness].

(8) Learning: cf. Vinogradova 1975 for cingulate cortex, entorhinal cortex with hippocampus; "registration" for example in the thalamus, "schema formation" and "storage" (cingulate and entorhinal cortex); "remembering prototypically or marked [as exception or single case]".

(9) Planning (goal; starting point – way; model of the cingulate cortex after Gray, Posner, Goldman-Rakic, with prefrontal and parietal information). The significance of the prefrontal cortex (dorsolateral prefrontal cortex; area 46) as a possible component of consciousness is inferred from the contrast of the deactivation of this area during sleep, and from the course of the tract of the locus caeruleus (see Item (1); prefrontal cortex and locus caeruleus are reciprocally connected).

(10) Experiences in coherence: the differentiation of the body feeling sphere and the external world. On the concept of coherence cf. H.4.1, E.14-16, D.24; I.4-6, I.7.2. Neurobiologically: the ego-centrism vs. allocentrism of neurons, for example; mirror-neurons as 'we-centric' neurons (Gallese; B.2). Extrasomatosensory, visuo-motor and surface-sensitive vs. visceral-sensitive and deep-sensitive: different associative and polymodal, convergent areas after Pandya & Yeterian. (De)synchronization (e.g., septum;

thalamus), comparison (subiculum etc.) or feedback, "embodied simulation" (mirror-neurons) as neuromechanism underlying coherence. From "experience in coherence" patterns or knowledge of reality (world view, image of nature, for example, empirical laws), of the social sphere (image of society; rules) and of the ego as a personality (e.g., autobiography and self-consciousness)[22] is built up. On the body schema cf. Yamadori 1997; cf. Gallese (in press) on the body-schema as an *unconscious* body *map* and on the body-image as a *conscious* body *perception*.

2.2.2 Becoming conscious

Special reference is given to Gray's integrated model of consciousness. In terms of systematics cf. also C.4B and above all F.6 (incl. F.6.4).

1. ARC OF PAPEZ: The *CINGULUM* together with afferents and efferents of the cingulate cortex, and the *FORNIX* could represent central *nerves for becoming conscious (of s.th.). Closing several electrical circuits*, especially the *arc of Papez,* is probably necessary for this phenomenon. The arc courses from the subiculum (neuron from there to the anterior thalamus) and hippocampus, through fimbria, fornix, mamillary body, through the mamillo-thalamic tract, through the anterior thalamus (neuron anterodorsal-thalamic up to the presubiculum), via the radiatio thalamica, into the cingulum (and if necessary to the cingulate cortex), and up to the presubiculum. From there it courses to the subiculum and to the entorhinal cortex (Rosene & Von Hoesen 1987:440; 434ff). The arc of Papez is *determined by the comparator* (subiculum), by the partially *topographically organized addresser and synchronizer* (thalamus) and by the hypothesized *problem solver* (cingulate cortex). Regional cerebral blood-flow (rCBF) and cerebral glucose metabolism (rCGM) are co-regulated by the thalamus. There are also direct subicular connections with cingulate cortex (areas 25 and 29; cf. Swanson 1978:37; Rosene & Von Hoesen 1987:440-441).

2. Further functional specifications (SUBICULUM, ENTORHINAL CX., HIPPOCAMPUS): A *match/mismatch* is registered in the SUBICULUM, functionally a comparator of actual with stored information (Gray & Rawlins 1986 : 171ff). According to Gray, *the result of comparison is linked to*

[22] Cf. Tilo Kircher & Anthony David (Eds.), "The Self in Neuroscience and Psychiatry", Cambridge UK 2003: Cambridge University Press, with preliminary reports on self-recognition, self-face recognition and self-knowing consciousness as episodic memory. The *right*-hemispheric prefrontal cortex is implied as being part of a *self-related memory*. The integration with Gray's, Rolls', Gaffan's, Goldman-Rakic's and Pandya's models, as well as the clarification of the role of the various commissures, remain to be explored. Cf. C..2.2.2; C.1, Note 1; as an example, cf. Rizzolatti in: Leporé et al 1986.

consciousness or to becoming conscious of it (Gray, "On binding and timing", nd)[23]. Categories and concepts could, in principle, be formed by comparison and contrast. Other comparisons between different classes of information do probably take place in other cerebral localities. The following partial systems are functionally connected. The ENTORHINAL CORTEX (= area 28) has the function of a station of relay and convergence of several electric circuits (cf. Goldman-Rakic; Yeterian & Pandya). It has direct afferents from the prefrontal cortex (area 46), the superior temporal sulcus (acoustics, language), and the orbitofrontal cortex. Reactions in area 28 are normally excitatory (Vinogradova 1975:26). The ENTORHINAL CORTEX, and probably the CINGULATE CORTEX as well, *form schemata* (my reinterpretation of Vinogradova 1975:22-25; 26-27 ["no decay", "(habituation) is virtually absent"; "no decline in the responses themselves"]; "normal value" after Wieser 1992 [Summary]. Both localities could represent the *main components of a "central processor"* (see below). HIPPOCAMPUS elaborates actual feature differences ("new" vs. "familiar"; cf. Gray & Rawlins 1986:171, 176 ["relevance" in comparison and reinforcement]). It forms connections or relations and represents a *generator of sequential* and *gestalt-related associations* which is also pertinent to the formation of spaces, scenes or episodes (see: field CA3 as an autoassociation matrix after Rolls 1990 and Rolls & Treves 1998:97/98; cf. Steinbuch's (1966) "learning matrix"). HIPPOCAMPUS might also be an inhibitory memory (Pohle et al 1987, cf. C.2.3(1)).

3. Functional models of CINGULATE CORTEX: It has specialized fields for visceral motorics, the feeling of pain, vocalization, attention to action, several motor fields, and a visuo-spatial field. Therefore, *goal selection*

[23] Cf. Gray 1995/18:659-722 ["The contents of consciousness consist of outputs of the subicular comparator"]. The *objections* to Gray must be viewed with skepticism. Damasio et al have reported on one single case and have compared it to another case published (Damasio et al, "Multimodal amnesic syndrome following bilateral temporal and basal brain damage" in: Archives of Neurol. 1985/ 42:252-259): The hippocampal formation (i.e., incl. subiculum?) was *probably (p. 253)* destroyed and much more seemed to be destroyed (or removed?) in both hemispheres. The "conscious reactions" of the patients *continued to exist,* new learning and correspondingly episodic recognition were practically not possible any more. The *documentation* by Damasio et al poses a series of critical questions in my opinion ("premorbid personality"; "fourth-generation computed tomogram"; "standard procedure of *our* neuroimaging lab"; Fig. 2-2; how about transneuronal degeneration? etc.). Damasio's et al *test results and observations* can, in my opinion, be accommodated informally and to a large degree to the British research by Gray as well as by Rolls and Gaffan. In his discussion of his model, Gray (1995/18(4):711) emphasizes the distinction between "the effects one might expect after damage to (1) a region critical for consciousness as such, or (2) a region responsible for organising the contents of consciousness..." The subiculum is not the only "locality of consciousness".– See F.6.4 [Overview of subicular (etc.) data] and O'Mara et al 2001.

and goal control or goal pursuit seem to be localized *there* (see Posner; as a complement or contrast, cf. Gray 1993, Schultz et al 1997). Referring to Goldman-Rakic's model, connections between the anterior cingulate cortex and the parietal visuo-motor or sensory areas 7a/m, etc., as well as with the center of construction or convergence of the prefrontal area 46, have been highlighted. Following Posner, the *center of attention* and the highest system level of *problem-solving* are to be localized in the cingulate cortex. Vinogradova describes the cingulate cortex as a *"learner"* (for long-term memory). Thus, *becoming conscious* could be hypothesized as a "temporally sustained reflex" or as a *"temporally sustained reafference or feedback",* on the basis of comparison or continuity (for example, the frequency of the presentation of a stimulus), or as a synchronizing wave potential being localized in that cortex. Foveal and pretectal information relayed in the pulvinar to areas 24 and 29 are probably central for these theoretical functions. Pretectal information can concern reflexes of light, convergence, accommodation and fixation. Foveal and pretectal information is also relayed to area 48 [= POSTSUBICULUM = dorsal presubiculum] which is reciprocally connected with the subiculum[24]. The CINGULATE CORTEX, SUBICULUM, POSTSUBICULUM and PRESUBICULUM are connected by means of the arc of Papez (Swanson 1978:35). This highlights the connection between the models of the subiculum and the cingulate cortex in terms of the unity of the *limbic system.* Moreover, this can give us the clue as to how to conceive the *"central processor".* The functional significance of the arc of Papez is sometimes disputed, but see Gray for detailed specifications and modeling efforts. See Vinogradova 1975 and Gaffan & Parker 1996.

Areas 24, 29, 48, 28, the hippocampus and the subiculum can be regarded as the main components of a central processor [components or auxiliary mechanisms of consciousness, ego-consciousness; goal-consciousness?].

Three more functional models shall be considered in this context:

4. Decision and action: The translation of "motivation into motor action" (also: from plan into steps of thought?) takes place by relaying information from the ANTERIOR CINGULATE CORTEX via the BASOLATERAL AMYGDALA to the NUCLEUS ACCUMBENS[25]; to the latter, information is relayed also from the subiculum, from the entorhinal cortex and from area 35 [a short-term memory] (Witter et al 1989:209-211). From the nucleus accumbens, information is relayed to motor systems. See C.2.3(2)

[24] See Witter & Groenewegen & Lopes da Silva & Lohmann 1989/33:161-253; 196, 220, 183 (area 48).

[25] See Kalivas & Barnes (Eds.) 1993; Gray 1993:1167/ 77.2, 1168/77.3R.

[dopamine]. See Gallese C.2.4(4) for the ventral premotor area and Schultz et al 1997:68 on the coding of components of goal-directed behavior in the basal ganglia and the orbitofrontal cortex in monkeys (hinting to a prefrontal short-term memory, with the participation of striatal neurons).

5. Short-term memory (area 35): RHINAL SULCUS (= Transentorhinal field? = AREA 35 = PERIRHINAL CORTEX) is interpreted as (one) short-term memory (Gaffan 1992:48): "(The rhinal) cortex is specialized for short-term memory"; cf. Rolls & Treves 1998:96: *"'recognition' memory"*). Direct afferents from the anterior cortex cingulatus (area 24) do exist. With Alzheimer's Disease, this region is the first to be affected according to Braak and Braak (1992:17): a relay from the neocortex to the limbic system. According to Pandya and Yeterian, we are dealing in area 35 with projections from somatosensory, acoustic, and visual association fields of third, i.e., highest, order: tasks of coordination (e.g., objects / features in context)? The strongly developed transentorhinal field with its alternating arrangement of allocortical vs. isocortical cell structures is considered to be specific for Man in terms of evolutionary biology (Braak & Braak 1992: 12-14). See C.4(28) and H.4.1(3).

6. Scene or episode formation: Information flow and its functional integration from area 35, through the fornix to the mamillary body: The FORNIX and MAMILLARY BODY are considered to be central for the *storage of scenes, i.e. for episodic memory,* and for the *identification and localization* of an object in space, as well as for the left-sided vs. right-sided goal-motor orientation of ego in space.

See Rolls 1990:446 [after Gaffan]; Rolls & Treves 1998: 96 ["...monkeys with fornix damage are also impaired in using information about their place in an environment..."], 97 [Fig. 6.1: Model of information flow and its integration as a *functional assembly*]. The experiments by Gaffan and Parker differentiate between two types of localized memories: "Interaction of perirhinal cortex with the fornix-fimbria: memory for objects and 'object-in-place' memory" in: J. Neurosc., 1996, 16(18): 5864-5869 ["The pathway through subiculum, fornix, mamillary nuclei, and anterior thalamus is essential for normal episodic memory in the human brain...", S. 5868]. Cf. Parker & Gaffan, "Mamillary Body Lesions in Monkeys Impair Object-in-Place Memory: Functional Unity of the Fornix-Mamillary System", in: J. Cogn. Neurosc., 1997, 9(4):512-521; abstract:

"...in primates the fornix and mamillary bodies, together with connected structures [i.e., by means of the arc of Papez, E.H.]... form a cortico-cortical association pathway for episodic memory."

The different components of 'memory for objects' and 'object-in place memory' might correspond to the "what"-stream and "where"-stream of visual information processing. See C.2.1(6(4, Note 2)). With the Korsakoff Syndrome, temporal and local orientation is severely disturbed due to lesions in the mamillary body, i.e. affecting episode formation. We have described and exemplified information processing as a functionally, ana-

tomically, and cognitively integrated phenomenon. In addition, cf. the reference to Vinogradova 1995 [SEPTUM] below, and Gray 1993 for motor behavior.

7. Electrophysical potentials: A further diagnostic trait of consciousness are electrophysical potentials of a certain frequency. This includes theta-rhythms, alpha-rhythms, (beta-rhythms) and gamma-rhythms[26] which form different cognitive results or information by (de)synchronization. These potentials are then partially *connected to intentionality and willful control.* The potentials also include what are termed "event-related potentials" which are partially (P300, for example) connected with cognitive activity. See Pfurtschaller & Lopes da Silva 1988; Vinogradova 1995 [*'filtering in'* vs. *'filtering out'* by the SEPTUM].

2.3 SOME BIOCHEMICAL CHARACTERISTICS OF COGNITIVE AND MEMORY FORMING PROCESSES

The biochemical characteristics of memory formation (of encoding or storage) include, for example:

1. Fucose: With avoidance learning, the oligosaccharid *fucose* is built into different suborgans of the septo-hippocampal formation. This seems to be fundamental for *long-term memory.* The build-in of fucose requires the convergence of different inputs onto one neuron, or one unit / assembly of neurons, under the influence of the hormone dopamine. The different "parallel distributed" localities in the septo-hippocampal formation can be synchronized (?; cf. Pohle & Acosta & Rüttrich & Krug & Matthies 1987: 410).

2. Dopamine: The *quantity* of the endocrine substance *dopamine* in the nucleus accumbens is decisive for success in learning: Receptors saturated with dopamine cause "reward", a medium quantity has a "neutral" effect, and too small a quantity causes "aversion" when *translating motivation into action* in the nucleus accumbens. Thus, we have an example of the translation of neurobiological and endocrinological concept formation (i.e., critical functional neuroanatomical locality and hormone differentially quantified) into behavioral science concepts (motivation)[27].

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[26] On 40 Hz oscillations, cf. F. Crick & C. Koch, quoted by Revonsuo & Newman (in: "Editorial", *Consciousness & Cognition,* vol. 8/1999:124): "...an intentional mechanism that temporarily binds the relevant neurons together by synchronizing their spikes in 40 Hz oscillations... objects for which the binding problem has been solved are placed into working memory." See C.2.4(4) on the binding problem.

[27] See also Depue & Collins 1999/22:499-500.

3. Phosphorylation: The phosphorylation of neurofilaments and microtubuli (by means of the cytoskeletonic tau (τ) factor) is *relevant for memory (formation)* and depends upon the sufficient quantity of ATP (adenosine-tri-phosphate): This result has been obtained from the analysis of Alzheimer's Disease by the inversion of an argument (cf. Meier-Ruge & Bertoni-Freddari 1997:237).

4. Excitation, formation of synapses and "encoding": Pyramidal cells, especially, are critical localities on which excitatory substances (e.g., glutamate or aspartate) are accepted. Excitations there can start the "encoding" process and thus contribute to memory formation. Proteins of the dystrophin complex such as beta-dystroglycan are, for example, distributed onto pyramidal cells (among others in the hippocampus and neocortex) and onto Purkinje cells (in the cerebellum, postsynaptically). These proteins participate, for instance, in the formation and modification of synapses which are important for long-term potentiation [the theory of so-called Hebbian synapse or cell; cf. Calvin 1995]. Beta-dystroglycan regulates, in cooperation with other components of the dystrophin-complex, the hormone acetylcholine which is relevant for memory formation. On the pyramidal cells there are also growth proteins and transcription factors (in the sense of multiplication factors). A relation between irregular changes in the dystrophin complex, and cognitive behavioral deficits is claimed (cf. Brown & Lucy (eds.), 1997:122).

5. CBF (cerebral blood flow) *and CGM* (cerebral glucose metabolism) *are indicators for cognitive processes* in the cerebral regions (e.g., in image-producing techniques). This can be inferred by the inversion of an argument from studies of blood supply deficiency (ischemia) in Alzheimer's disease, and from studies of schizophrenia. CBF and CGM form part of the addressing mechanism in the memory search.

2.4 COGNITIVE SCHEMATA AND KNOWLEDGE

1. Storage of whole scenes: Knowledge about reality is neurobiologically complex. *Whole scenes (events) are stored.* These may be the basis of *episodic* memory. They are partially *truth value-definite,* i.e. true or false, in accordance with perception, remembrance and verbal description. Assumptions (hypotheses, beliefs) can be built on them: They can be communicated verbally as propositions. The assumptions can be interpreted as expectancies which coincide with experienced reality, or not. This forms the basis for naive verification (to corroborate as true) or falsification (to refute as false); verbally: "is the case", "will be the case", "does not coincide".

2. Knowledge: "Knowledge", "beliefs", "plans" etc. are semantic or cognitive schemata. This also includes motor-cognitive schemata (cf. Gallese 2000, C.2.4(4)).

3. Functions of semantic or cognitive schemata: Above all they serve for (1) orientation; they are interpreting and context-forming (system, context). They serve for (2) management and coping; they are goal-directed and action-guiding (acting, locomotor behavior, planning, the production of artifacts). Schemata are (3) facilitated in terms of the physiology of learning. They are (4) a habituation-resistant stabilization in long-term memory ("no decay"). They accomplish (5) a translation into a linearization or a sequential construct in psycho-motor and cognitive terms (e.g., with *scripts*). They are (6) a standardization, probably based upon frequencies and comparisons in terms of the physiology of consciousness, in the sense of Rosch's theory of prototypes, or they are just an individual specification. See A.III, H.2.3(2(2)); A.22(9ff).

4. Storing semantic schemata: Semantic schemata are neocortically *stored* – probably *in the vertical column or cortical macrocolumn* – and can be addressed via the septo-hippocampal formation. It seems also to be the mechanism by means of which they have been originally encoded (my hypothesis; cf., in part, Rolls & Treves 1998: 95ff). It is conceivable that semantic schemata are stored *by the synchronization* of different vertical columns (or topographically analogous thalamic, striatal, etc. neurons) and can be retrieved again *by resynchronization.*

On the electrophysiological characterization of schema, cf. C.3.2(3) below. On the vertical and cortical columns, cf. Calvin. On the theory of semantic features in columns, cf. Fujita who proposes a *"visual alphabet hypothesis".* Semantic features are coded in cortical and – according to the documentation – vertical columns, which are stable over a long time (in: Sakata et al (eds.) 1997:263/Fig.3, as an example for components). Gallese's report on the neuronal differentiations of functions in the ventral premotor area in the monkey is similar (columnar organizations not reported). Gallese presents a *"motor vocabulary"* as schemata or subprograms, for example, the differentiation between general motor action goals vs. specific ones ["hand aperture phase" vs. "precision grip"; cf. Gallese in: Metzinger 2000:326]. On the synchronization – *"feature binding"* – in schemata, cf. Arbib, Singer in: Arbib 1995; Singer 1993.

3. "MENTALISM" AS A PHILOSOPHICAL POSITION

The philosophical position of mentalism *(mentalism-A)* says: Cognitive structures are indispensable and are irreducible (to neuronal structures, for example).

3.1 ON THE MEANING OF THE CONCEPT OF THE MENTAL

1. Thesis of a "structural mechanism": The following objects and processes in Point 2. are centrally included in the concept of the "mental". They are phenomena which belong together and obviously form components of a *structural mechanism with the periphery being coupled to it*. The concept of the "mental" could then be made precise in terms of a structural and functional model of this mechanism. Two examples of such a model should perhaps be pointed out. One incorporates Stachowiak's (1969) cybernetic model of thought and recognition (and periphery) (cf. C.1). The other one represents the idea of a *central processor*, e.g., Gray's, Pandya's or Goldman-Rakic's models (cf. C.2.2). This includes the contents (namely the 'mental model'). Note that the idea of parallel distributed processes does not exclude their potential *integration* (synchronization or correlation) nor their *central control* (feedback).

2. Exemplification: "Mental" is here prototypically explicated and exemplified as largely overlapping features, such as:

(1) *Schemata* as structures of meaning; their components; their function as procedures, goals, contexts. They include episodes or events in their stored form.

(2) *Abstraction, generalization, concept formation* (formation of invariants). *Meaning is characterized by features or procedures.* In neuronal terms, we are dealing, for instance, with polymodal or associative-convergent coded information.

(3) A *representation of reality structures;* it is limited, for example, to central properties. Such a representation also includes the attribution or disputation of characteristics to objects, persons, etc. (see below: "Note on Gallese").

(4) *(Communicative) comprehension* of the other person's behavior, thought, and planning, *and production* of one's own behavior, thought, and planning.

(5) *Central processes of consciousness or attention and thought.* This includes goal pursuit, need satisfaction; the communicative specification of goals, reasons, causes (justification); (deductive) conclusions; and inferencing (of covered, obvious, probable features or events). These processes

form a presupposition of decision-making. Furthermore, processes of construction or combination and analysis for the formation of a cognitive (intermediate) result are included here.

(6) In terms of evolutionary biology, a *"new" memory code in Man* (conceptual features of meaning [as abstraction]; acoustic or speech motor "word image" + meaning [in the sense of objects, features, etc. represented in a non-acoustic modality]; i.e., *"language"*).

(7) A *memory component or content* (a "schema"; its formation as a prerequisite for storage; as content, a selective representation of a component of reality).

(8) Integration in the form of an *internal model of the outside world* which represents reality selectively (for the purpose of orientation, management, and the control of expectancy; the "coherence" of such a model is partially achieved by very frequent feedback with the outside world; remembrance is "prototypical" or "marked (even as an exception)". Moreover, an internal model of the inside world is needed (ego-constitution or self-conceptions; "naive" theories of thought, behavior, body, illness, healing, dreaming, etc.). See Stachowiak 1969.

(9) Functions of the components of control *(buffer; central processor).*

3. Meaning formation (semanticization): The semanticization of physical-chemical processes is explained on the basis of the properties of cell types, namely of receptor or perception or motor cells (in conjunction with relay and storage cells). Meaning is feature, object, scene, sequence and / or goal defined. Storage, comparison, integration, analysis, abstraction are presupposed (cf. C.1, C.2.1).

4. Note on Gallese's contribution (2000:329-330): "[the] basis of 'mentalism' (defined here as our capacity to attribute beliefs, desires, intentions to other persons)". These *attributions* (cf. A.19, E.14(3(4)), partially characterized as special schemata, are pursued in neurobiological and philosophical terms: *intentionality* is neurobiologically correlated with neural "intentionality detectors" *(specialized cells).* In such cells the relation between object and goals is coded. This includes the coding of the relation between actions and acting persons *(agency; "ego" vs. "the other")* as a basis for determining *subjectivity and intersubjectivity.* Gallese points out that even the philosophical concepts of "causality" and "goal of action" can be matched with neurobiological concepts. In recent papers, Gallese elaborated on the ideas of 'mirror-neurons' and described a mechanism of "embodied simulation" which serves 'we-centric' understanding, reciprocity, communication and probably *social learning*. It might even lead us to a specification of Chomsky's idea of a "language acquisition device". See A.5, Note 6, and A.6(7). Gallese writes (website /interdisciplines 2004): "I

employ the term 'embodied simulation' as an automatic, unconscious, and pre-reflexive functional mechanism, whose function is the modeling of objects, agents, and events... it also generates *representational content* [italics, E.H.]... Embodied simulation is experience-based." The *degree of the productivity* of this mechanism is still an open question. At least, we are dealing with a neural mechanism which serves the *production of coherence in social cognition*.

3.2 SOME REMARKS ON THE EXPLICATION

1. Neurons differentiate meaning in contrast: Only a very few neurons are excited (for instance, in the hippocampus; principle of parsimony and precision as prerequisite of memory formation). Hypothesis: in addition, neurons discriminate meaning (features, objects, local, temporal, functional and causal relations) in accordance with cerebrally internal *goals of processing* on the basis of differential excitation ("What does matter?"; "what is X used for?"; "what is being searched for?"). "Whole" scenes, as well as courses or interactions (in scenes), are neuronally registered, stored, and, perhaps, analyzed. Relations and person categories ("giver", "taker"; "source", "goal" = case in the sense of the theory of language; or rather the aspect of a social role) are learnt implicitly or explicitly as schema or as components of schemata by contrast (hypothesis; cf. A.22C).

2. Translation into a verbal code: Non-verbal codes or information coded non-verbally can be *translated into a verbal code* (second order code: characterization and reference [e.g., in terms of traits or objects, or in local and temporal terms]). This verbal code is assumed to be *completely interpretable in neurophysiological terms* (i.e., in the sense of different sensory information [word image + meaning] which is convergently relayed as an association onto one neuron). The process of translation consists in *determining equivalencies* (cf. G. Klaus). This new, verbal code serves, functionally, the externalization of intended meaning, communication, comprehension, the ability to have the faster management of complexity and to have faster acting. It would be extremely difficult to translate all messages into painted pictures, into dancing or motion, or even into olfactory or perfume substances. This new code is characterized by abbreviation(s), selection, clarity, new combinability (productivity) and velocity of application. See A.5(4) on the origin of language [following Gallese 2000].

3. Concept of schema: If we ignore the argument in (2) above, *the theoretical concept of schema* as having content or meaning seems to require a mentalistic interpretation. Certain properties of the schema concept are *electrophysiological* ones (my reinterpretation of Vinogradova 1975): "no

decay", *"no habituation"* (italics by me); i.e., *learning and then holding the respective schema in accord with the exigence of the corresponding situation.* This exigence consists of the pragmatic conditions of application: a schema is also a schema of action. A characterization – at least a partial one – of the *concept of schema* (and its cerebral processes of use) and of semantics in terms of *learning, sensory, motor or simply electrophysiology or biophysics* appears to be feasible. See A.22C.

4. On the integrative function of internal models of the outside world (Stachowiak 1969): Compare in detail C.2.2.1(2(10)), 2.4(1) and 2.1(4 [Sokolov]). We try to present neurophysiological or biophysical arguments to characterize such internal models of the outside world. I interpret the necessary formation of coherence as a function of "buffer" organs (cf. also A.3, A.7). Authors like Gallese (2000:330) recognize content domains of social cognition as *socioneuronally defined coherence* ('[naive] theory of the mind', 'subjectivity and intersubjectivity'; egocentrism vs. allocentrism vs. environmental space according to Rolls).

5. Postulate of a buffer: I recognize *buffers* as specialized brain regions which consist of *neuroanatomical control components, especially of a "central processor", and among other things of consciousness of goals, of motivation memory, of short-term memory and of working memory.* One or more of such buffers seem to me to be necessary as an operative and instrumental basis for mental functions and processes[28].

The self-motivating and self-controlling function of a buffer is central for "mentalism". The *ability to build up a sketch of a plan and to anticipate real action* seems to be a derived special *function of a memory which remembers goals, and is able to derive the contextual conditions of actualizing them (incl. sequences of actions) as cognitive structures from memory and from situational perception* (cf. A.18, graphics). This ability is part of motivation. Motivation is a program which has biological components and is largely learned. This includes (1) daily life routines [cf. E.5-7; A.10-11; E.22-24], (2) situational cultural patterns of action [cf. A.20; A.18; A.III], (3) bio-clocks [cf. A.2], (4) needs (biochronically regulated?) [B.7(1); D.0.3(1-3)], (5) affects [A.9], (6) evaluative reinforcers [F.6.2; A.9; C.2.3(2)], (7) goals [A.3].

[28] Buffer organs include so-called bio-clocks (e.g., pineal body, pituitary, suprachiasmatic nucleus) which regulate needs, processes of growth and other life processes, both physiologically and biochronologically. Cf. A.2. On the "central processor" cf. C.2.2.2(2/3), especially D.0.2(7) [Concept of a circuit with distributive functional centers].

3.3 MENTALISM-A AND MENTALISM-B: REDUCTION TO NEUROPHYSIOLOGISM

1. Thesis of reducibility: The principle of mentalism-A can be contrasted with a *program of "reduction of mentalism-A to neurophysiologism".* This program would have to achieve the reduction of mental structures, processes, and functions, to biophysical-chemical or, at least, to neurophysiological ones. A reduction of mentalism in this liberal sense seems to me to be possible in principle. But the more physicalistic reduction that would take place, the more complicated the result would appear (problem of emergence). The *subject of reduction* could then consist of the *translation and coordination of information* (cf. C.2(4)). We attempt to describe and explain consciousness and semanticization (meaning formation) in neurophysiological and even substantialistic terms: We emphasize questions (1) of biophysicality (brain waves, oscillations, (de)synchronization, (2) of biochemical and neuroanatomical substantiality (e.g., hormones, proteins, cells and cell assemblages, also as brain areas), (3) of sensory and learning physiology (codes or sense modalities; abstraction and connection [for example, causality]; search processes). With regard to the neuroanatomical components we point out that, in part, we are dealing with *organs or instruments* with corresponding functions[29]. Organs of interactions between the outside and inside worlds *mediate the uptake* and *transformation of information*, *schema formation* or rather *semanticization*.

2. Non-physiological paradigm of scientific research: Mentalism abstracting from neurophysiology is – in a secondary meaning of the term *(mentalism-B) – a paradigm of scientific research* which has produced numerous and important accomplishments in linguistics and cognitive science. Many of these accomplishments seem to stand up to critical trials – at least up to now. The results of this paradigm do not need to be presented in an excessively complicated or incomprehensible "physicalistic" form of reduction. The demonstration of reducibility in principle or – weaker – of *compatibility* with neurophysiological models will do *for the time being*.

"Mentalism" in the sense of the definition mentioned at the beginning would then be an indispensable or unavoidable *aid in concept and theory*

[29] In technology, instruments are often built which imitate the functions of organs realized in nature. And nature often seems to anticipate the functions of technical instruments. We describe the functions of neuroanatomical organs in terms of models. This makes up for a substantial portion of the issue of "mentalism" in brain research. To explain in evolutionary terms how an organ was developed is a different issue.

formation for reasons of simplicity, clarity, order and operativity, but reducible in principle.

4. SUMMARY

The most important hypotheses and results are:

A. Thought

1. Thinking is interpreted as an information-processing process.
2. This exists biophysically in a wave form.
3. The origin of meaning in brain waves (semanticization) is explained in terms of a model. The semantics of neurons is determined in contrast by means of the discrimination of properties (parsimony of representation for storage in memory).
4. Information or representation-forming processes are defined by focusing (visually by oculomotor reflexes and foveal information).
5. The formation of information is, in addition, defined as being a functional assembly of diverse information.
6. This includes the composition of whole scenes or episodes by means of an auto-association matrix in CA3 [hippocampus]. For that, the relevance of "new" in comparison to "old" information is assessed for storage in the hippocampus.

B. Consciousness[30]

7. Wakefulness, consciousness and possibly intention and attention are to be distinguished in terms of cerebral localities, and electrophysical potentials, or rather correlations (e.g. the 40 Hz oscillations vs. other rhythms). Following Jouvet, wakefulness (incl. the basis of consciousness, and sleep and possibly dreaming) seems to depend upon locus caeruleus, surrounding nuclei and the ascending reticular activating system (ARAS).

7a. Consciousness as content is, following Gray, the result of comparing external information with stored information from neocortex in the subiculum.

8. Generalizing one could say: *Consciousness is* the result of a reafference or *feedback* which persists long enough, or is held long enough "in the buffer" – e.g. in the subiculum, in cingulate cortex or in the arc of Papez (depending upon the problem, it may not be for too long).

9. Problem solving and goal pursuit are localized in the cingulate cortex as a level of control. *Consciousness includes goals and alarm.* [According

[30] For the "concept family" of structures which can constitute consciousness and which are based on *comparison,* cf. primarily C.2.2 [Consciousness], F [Conscience as comparator], D.0.2(7) [Neurobiology of the free will], E.17(/18) [Self-esteem]. The cognitive, moral, intentional, emotional structures probably all use the subiculum (and the arc of Papez).

to proposition 7 and 8 we compare in operative terms: The information fits or does not fit the goal, and we proceed correspondingly. Goals include focussing and identification, even when an incident is happening to us. Goals guide search. A *verbal* address can be neurophysiologically effective].

10. One (inter alia?) short-term memory ("recognition memory") is reported for rhinal sulcus in area 35.

11. The fornix is fundamental for left- vs. right-sided orientation of ego in space. *Consciousness* seems to be *additive, integrative or amplifying,* according to assembly or accessing relay of information. Emotion might affect these functions (see F.6.4 on cognitive functions of the limbic system). *Centers of consciousness* could be *distributed and interconnected by electrical circuits* (in the sense of Goldman-Rakic's and Gray's models). The circuits through the basal-ganglia point to this (e.g. Alexander according to Goldman-Rakic 1988: 194; Rolls & Treves 1998:180; Yamadori 1997: bleeding in the putamen). These centers could form part of a *central processor.*

C. Knowledge and schema formation

12. Following Vinogradova, schema formation could take place in the entorhinal and cingulate cortex.

13. Cognitive schemata are electrophysiologically defined as "no decay", "no decline in response", "no habituation"**,** but as a pattern which, if turned on, is activated in unreduced strength. In terms of learning physiology, a certain number or duration of "stimulus presentations", and a neuronal or semantical feature-related synchronization, in connection with electrophysical potentials, underlie that phenomenon.

14. Cognitive schemata are coded, probably in vertical minicolumns or cortical macrocolumns. Examples are: "Visual alphabet hypothesis" (visual features are defined and distinguished according to columns in the area TE) and "motor vocabulary" (visual features and their relation to behavioral intention; observed goal-oriented and instrument-oriented motor actions of other persons and one's own execution of such actions coded in the ventral premotor area; a columnar organization there has not been reported to date).

15. The formation and storage of a whole scene are basic for knowledge and for episodic memory.

D. Translation

16. A concept of translation is introduced which is determined as recoding (also into an associative or convergent neuronal code) or as coordination. Sequences, relations, even causality might be included here.

17. The “translation” of motivation into action takes place from area 24 (anterior cingulate cortex) via basolateral amygdala, in the nucleus accumbens from which information is relayed, into the psycho-motor system. Rolls (1999:73) also points to the role of the orbitofrontal cortex for this.

18. The quantity of the hormone dopamine in neurons of nucleus accumbens defines “reward”, “neutrality”, “aversion”. This represents an example for a translation of behavioral intention into the activation of motor effectors by means of an endocrine substance.

E. Coherence

19. “Coherence” in environmental, social and (ego-)personal terms results from the comparison and neuronal identity of observed “thou” and “I” doing-it-myself, as well as from the structure of scenes and episodes (cf. Gallese 2000). See proposition 14.

20. From propositions 7a and 8 or 9, results: The formation of coherence (in a world view, in partially systematized knowledge) consists of comparisons of perceived external information with information already stored, and of the elimination of faultily perceived or remembered information. This adds to the connection of old, existing information and new information. See A.22(14),

21. Tarski’s correspondence theory of truth considers truth as being an agreement of a statement (or, possibly, a proposition) with verifiable reality (a fact) referred to. In addition to Tarski’s *concept* of truth, *procedures* of verification and refutation, as well as the persistent search for alternative explanations (Popper, Albert), are probably necessary for an *optimal production of coherence*.

F. Memory

22. Memory is the presupposition of learning. Learning is the storage of information. Memory includes the reuse of information by retrieval. The formation of coherence facilitates and enables memory formation.

23. Functions in memory (learning or storage, retrieval, analysis, convergent combinations, new recombinations) are differentiated according to brain areas or groups of nuclei, to a temporal form (especially the duration of storage or form of decay), to connectivity and to meaning (e.g., sense modality, goal-motor systems, scenic events). As examples, one should refer to short-term memories (memory of seconds, minutes), working memories, long-term memories, and motivation memories. There are also functional anatomical arguments for considering the formation of scenes and categories as a possible basis for episodic and semantic memory models (e.g., mamillary body; subiculum; area TE as feature memory (cf. Fujita)).

24. A cell becomes semantically characterized and undergoes synaptic changes in the processes of over-learning (the semantic specification of a cell).

25. Proteins which support the transfer and storage of information as well as form and stabilize synapses, and processes of the (de)synchronization of different cells for storage, search and retrieval, are memory-forming in biochemical or biophysical terms. If the cell is not "needed" it is "essentially" switched off, or inhibited.

G. Evolution

26. The evolution of knowledge is especially characterized by coherence formation (and by innovation). The criteria of concept and theory formation, for ontological presuppositions (for instance, "Ockham's razor") are added. These consist of criteria of metaknowledge. Norms of socialization select, in the process of elimination, in accordance with Propositions 20 (in the sense of an even "pre-scientific" evolution of belief systems) and 21 (evolution of science).

27. The evolution of primates and of homo sapiens sapiens raises the question of the origin of language. In my opinion, Gallese's analyses hold the key: the neuronal congruence of "I" and "thou" in intended meaning; moreover, a second-order code (language as a [mutually congruent] speech-motor and acoustic representation of a semantic representation [of objects, properties etc.]).

28. Short-term memory (area 35; transentorhinal field after Braak & Braak 1992:12) is considered to be extremely developed in Man. It could be especially resistant to acoustic stress even if only with limitations (especially coarse Nissl substance). This field is to be seen: (a) in connection with social association and verbal communication, (b) in comparison with other primates, and (c) as a "bottleneck or gating" (cell layer II = Pre-α) after Braak & Braak's chronological analysis of the individual development of Alzheimer's Disease (Braak & Braak 1992: 16/ 17), a disease of civilization.

References: C.1: 154.; 140.; 28.; 5.; 36. *C.2.1:* 9.; 151.; 171.; 64. *C.2.2:* 44.; 177.; 82.; 107.; 110.; 75.; 64.; 65.; 66.; 67.; 62.; 114.; 115.; 11.; 178.; 164.; 123.; 173.; 50.; 51.; 23.; 130.; 132.; 87.; 120.; 149.; 165. *C.2.3:* 121.; 38.; 106.; 30.; 26. *C.2.4:* 130.; 164.; 30.; 48.; 52.; 14.; 149. *C.3.1/3.2:* 154.; 164.; 130.; 132.; 52. *[mentalism as attribution];* 91. *General:* 85. *[with charting];* 14.; 110.; 59.; 83.; 81.; 132.; 65.; 107.; 167.

D. FREE WILL AND FREEDOM

In this chapter, a philosophy of subjective freedom and subjective free will is outlined. These concepts are partially described as heuristic procedures for one's own use. 'Subjective' refers to the inner perspective of the ego as a person who plans, intends, decides, and acts.

0. OVERVIEW AND PRELIMINARY NOTES

0.1 AN OVERVIEW

0. Preliminary notes: I begin with a reference to freedom as a relation, to the discussion of the determinism or indeterminism of free will and to the notion of freedom as a choice and/or optimized decision. I propose a subjectivist concept of free will which I translate into systems theory and cognitive neurobiology (0.2). I continue with a consideration of the determinants of intentions and actions, including a discussion of the functional and problematical aspects of needs (0.3).

1. Freedom and free will: linguistic use and conceptual explication

I start with a consideration of *linguistic usage:* reference to primates or humans and to components of action (1.); 'unfreedom' (2.); 'free will' refers to single acts vs. contexts of life (3.). *Explications* of the aspects of the concepts of "free will" and "freedom" follow: self-determination vs. hetero-determination (4.), becoming aware of the control of action and concomitant feeling (5.), reference to the social environmental field (6.) and to the private vs. social or professional sphere with its constraints and margins, as well as to basic dimensions of freedom (in health, psychological, and material terms) (7.), 'freedom' as a language-logical relation (8.), free will determined in its extent (9.). These explications are partially considered as being procedural, in the sense of heuristic techniques to be self-applied.

II. Freedom and free will: psychosomatic-pragmatic aspect

This aspect is determined by the following components: "feeling free" and its theoretical significance as an existential condition of Man (10.), experiencing freedom and the consciousness of freedom (11.), the strain of decision-making and its reasonable reduction, as well as stress (12.).

III. Freedom and free will: Pragmatic problems

The *problems* of the pragmatics of the concept of freedom and free will include: Free will is not arbitrariness; freedom and free will are relative to other human beings (13.). Ideological traps include such ideas that free-

dom or free will could be "unlimited" and could exist under the condition of withholding important information (14.). Complications include pseudo-freedom as the internalization of self-alienating goals, and resistance against socialization or normative pressure. The concepts of "internalization", "inner freedom" and "inner unfreedom" are explicated (15.). In an addendum, the concept of "inner freedom" is defined in contrast to possibly experienced coercion and as a part of one's identity, also procedurally in the sense of self-liberation (16.).

IV. Regulators of freedom, free will, and group pressure

The ability of regulating actions of corrections and of defense (17.) leads us to the concept of conscience as a *regulator* of free will. Conscience is specified as "criteria of relative rationality" (e.g., objectivity, social sense). Their relationship to the criteria of (self-)organization is discussed briefly. As metacriteria for a concept of rationality, "free from arbitrariness" and "reciprocal" are proposed (18.). Making responsible decisions (19.), learning resistance to group pressure (20.) and developing corresponding self-consciousness are especially emphasized (21.). As further regulators of free will, the principle of organizing life (formation of a *focus*) and the underlying development of mental interests and of one's project ideas or, for example, creative "structures" are mentioned. The regulators of free will are then reduced to reciprocity and to self-organization as an ability of structuring (22.).

V. Perspective of development

Education for freedom and for the use of free will and the creation of social and political preconditions for this are characterized as a perspective of development (23.). Freedom or the sense of freedom creates a coherent form of life individually as well as institutionally (24.). The concepts of freedom or free will are interpreted as procedures for individual development (25). The functions of freedom and free will are summarized in (26).

0.2 FREEDOM, FREE WILL, (IN)DETERMINISM, SOCIAL AND TASK REFERENCE

1. Validity: According to F.1, the following thoughts on freedom and free will hold true *for everybody.* Everybody has a constitutional right to freedom and free will to a reasonable extent, and in context.

2. Freedom as a relation: 'Freedom' is understood as a *relation between* a wanting, deliberating or acting *person and his/her* imagined, social or substantial-spatial *environment (in the sense of its perceived and/or conceptualized possibilities).* The relation consists in a conscious self-evaluation, or in a self-perception, by means of which a buffer can be generated

(degree of freedom; “inner distance” in subjectivist language). Constituents of this relation or buffer, e.g., obligations or permissions, means, capabilities and opportunities, are specified in this chapter (for example, D.6-9). See D.25 / Table 2 [Relations of freedom procedurally]; D.23; D.10-11.

3. Free will and indetermination vs. determination [of processes or states in Man]: Naively and falsely, literature might sometimes offer explications along the following lines: undetermined = “unpredictable (or unexplainable)”, “free”; determined = “predictable (or explainable, according to the logical symmetry of explanation and prediction)”, “unfree”. One should note that “(un)predictability” refers to *another* person in *dependency upon his/her knowledge!* We always explain and describe (some) *aspects* of events (also: events of action), *never* events in their *totality* (Popper, Albert; Stegmüller, Hempel). Otherwise we would have to explain the whole universe, and that is exactly the problem into which the uncritical position of “determination vs. indetermination”, or “determinism vs. indeterminism of free will” is heading. Compare the critical hint concerning Russell’s “law of universal causation” by Philippa Foot in: Berofsky (ed.) 1966:97. The question of determination vs. indetermination at this physical-cosmological level is irrelevant for the analysis of free will. One can even talk about free will if the decision or action seems to be completely predictable. For the time being, it suffices that the *person concerned wants* his/her intention of action and his/her decision *consciously in such a way and does not experience these as coercion.* Moreover the person concerned *should not alienate* himself / herself *from himself/herself* (according to D.15/16). Cf. D.18, F.1(1).

We may face many levels of description and explanation: e.g. a physicochemical one [cf. Post 1989:8ff: e.g. synchronization processes which might *depend* upon “search” and “goals”, i.e. a physiological metalevel] vs. a neurophysiological-neuroanatomical [sense-modal] one vs. a neuropsychological [semantic] one vs. a cognitive psychological one [attributions, classifications; representations] vs. a cultural anthropological or sociological one [norms, beliefs; evaluations; interactions (cf. A.22B/C)] vs. a cultural biological one [basic needs; stressors].

4. Freedom of choice and optimization of decision: The perspective to place freedom of *choice* between several action alternatives at the center of the discussion of freedom of will can be matched by the problem outline of being able to specify *independently* an *optimized* (for instance, just) (alternative of) action. We then have two levels of features: (a) independence in the sense of freedom of choice and decision and (b) optimization of decision. Free will could then be the combination of both of these levels of fea-

tures: *no arbitrariness (or choice by chance),* therefore optimization of decision; *no coercion,* therefore freedom of choice and decision.

5. Subjectivist concept of free will: I introduce a subjectivist concept of free will from the viewpoint of the ego to describe and explain single acts. In so doing, I refer, in principle, to a *level of description and explanation with the following features:* (a) with the subjective experience of stress, freedom, or unfreedom (in the sense of constraints) (cf. D.7); (b) with the subjective experience of *other* people's will, namely, of interaction partners (D.13, 17; F.1); (c) with one's own perception, intention, deliberation, decision and action, as well as one's own obligations to act; (d) with arguments, reasons, situational analyses which *build up and support* one's own *consciousness of free will* and one's own matched (concomitant) feelings (D.5) as well as *reduce stress or strain* frequently; (e) with self-determined or hetero-determined *tasks,* or with one's participation therein (cf. D.8/9).

A *cognitive* component of free will thus consists of criteria of decision-making, arguments, self-organizing procedures and their grounding in the system of thinking and decision-making of the person concerned. *Consciousness is thus buffered against arbitrariness. Ability to reason and the holding of rational criteria of decision-making, as well as criteria of organization, make up for autonomy and lead to ability of acting.* Free will is thus explicated *as decision-maker and planner* (D.18, 22). See D.10f, 13, 15f.; F.1(1); E.13, 19, 31.

A *psychosomatic* component of free will could consist in stressors which are differentiated in terms of the intensity of stress and load of decision-making. Stressors act upon the alarm system which functionally supports survival. Managing burdens of decision-making could then be conceived as being a *task of reasonable* (i.e. bound to rational criteria of decision-making) *reduction of these constraints* (cf. D.12/13; cf. D.18, F.1(1)). The psychosomatic component includes coercion, damage, monotony, or degree of leisure (cf. D.10(1)).

Both criteria together determine the *degree* of the autonomous capability of action (E.31).

Exercising free will requires *one's experiences in coherence* (cf. E.14) and *one's capability* of cognitive, moral and social judgement (E.13). Both are required for the *appropriation or rejection* of decision-making criteria or of norms of action (D.15/16).

In the following two points, the explication given is translated into systems theory and cognitive neurobiology.

6. Systems theoretical note: In terms of systems theory, *'free will'* is understood as being *part of an integrated system* of the thought and action of a person who is (1) *autonomous* and (2) who seeks to *maintain* his / her

own *autonomy* over time. 'Free will' is then (a) the mechanism of deliberation and of decision-making, and (b) a special state of this mechanism: the *consciousness of autonomy*. I introduce the concept of free will with special reference to the model of a *cybernetic, i.e., feed-back* system: perception, evaluation of the environmental field of action, and *buffer formation* [in the sense of leisure as well as "(degree of) freedom", cf. D.0.2(2) and preface (2.,3.)] are *operative preconditions* for exercising "free will", in the sense of deliberation, comparison, deciding between intentions of actions or rather alternatives of action, and acting.

7. Translation into a neurobiology of free will: In terms of systems theory, neuropsychology, and functional anatomy, free will consists of a *mechanism of deliberation and decision-making* (D.0.2(6)), as well as of a *conscious back-up of certain information in the central processor, i.e. operationalized as a buffer constituted by "memory of attention", "short-term memory" and (at least partially) "working memory"* (cf. F.6.1/ 6.2). The information referred to consists of the "cognitive component" (D.0.2 (5)). It is available within the central processor or is rather called up there, forms a feedback, a save-up, a reinforcement or a support for the process of thinking, deliberating, and decision-making, and constitutes the substantial and operative mechanism of decision-making. Moreover, there are stressors which can strain the central processor in affective terms (strains of decision-making and of expectancy).

As a basis of *neuroanatomical localization and functional modeling* of free will, I choose Gray's model (especially of the limbic system with the subiculum, including prefrontal cortex and probably TPO(-PGa); cf. A.5 [Notes 7 and 8] and C.2.2. [Gray's model of the subicular comparator as a model of consciousness]). See Gray 1993; Gray & Rawlins 1986; cf. the neurobiological model of conscience which is similar in substantial and functional terms in F.6 [data in 6.4]. Conscience is one of the regulators of freedom and of free will (D.22). See C4B, Note 11 [Family of the concept of consciousness].

0.3 DETERMINANTS OF INTENTIONS AND ACTIONS (INCLUDING NEEDS)

Free will refers primarily to the formation of intentions, actions, and plans (cf. A.16, E.V), or perspectives (cf. D.3). The discussion of D.0.2(3) is thus continued.

A thorough conceptual analysis of internal and external determinants (a) of intentions and (b) of actions can be found with G.H. von Wright 1980.

See also Heider 1958 from the viewpoint of "naive psychology". The following sketch might serve as an introduction to these analyses:

1. Determinants of intentions consist (1) of *'wants'* and (2) of *'duties'*. Wanting is normally based on needs and their reinforcement by socialization. This includes abilities, skills, knowledge. Duties consist of legal, professional and role-specific rules. These are transmitted in education and training. See F.1(6) and Schank & Abelson 1977 on *situational goals* (crisis, for example).

2. Functions of satisfaction of needs: These include *maintenance* of health, production of psychological well-being, material and existential security; joy, tasteful enjoyment *(zest for life)*; *development* of style, development of personality and especially of identity. *"Basic needs"* are theoretically systematized in: B.7(1), A.2 [Bio-clock], A.20 [Culture]; as a right: F.1.2a; as self-organization: primarily E.5-7; E.Vff. It is proposed that we separate 'basic needs', for the time being, from 'their individualized further refinement' and from 'consumption needs' on heuristic grounds. See D.24(2) [Need for freedom].

3. Problematic aspects of needs, wants, and motivations: Some needs may appear as problematic, unnecessary, or extravagant. This is partially a matter of personal decision, tolerance, or legal right. To strive for possession to a reasonable extent is legitimate in anthropological terms. Limits are individually, culturally, and legally variable. The use of property as a psychological means to strive for social recognition is at least problematical. On arousing "needs": Seduction by commercials is to be replaced by education and objective information on products. Never should there exist a dependency of Man on the "unconsciousness" and on what are termed "unconscious needs" (*'Unconsciousness'* is here understood as being a conditioned motivating artifact produced by psychoanalysis and advertising psychology, based upon the suppression or misplacement of consciousness, in contrast to biophysical-biochemical neural processes running without consciousness, e.g., very fast, very slow, unsustained or non-focal). The exercise of sexual violence is not a need as is sometimes supposed, but is overwhelmingly learned. It leads automatically to legal persecution. This holds true especially if other persons in dependency, against their will, or under the condition of withholding critical information and consciousness, are damaged directly in terms of their health, their bodies and their identities. This includes drug abuse. Envy, malevolence, sneering and hatred are not needs but behavioral faults which should not be tolerated or accepted. Needs may have degrees of rationality and the criteria thereof are partially relative. Hedonism is admissible as long as others are not damaged as a result. Life includes conscious joy (cf. E.32).

4. Determinants of actions: Internal determinants of an action consist (1) of the corresponding intention (volitional attitude, according to Wright), and (2) of the opinion about correct or adequate means. Both types of attitudes define a "reason" for an action.

External determinants of actions consist, for example, (1) of political interests, (2) of social rules of behavior, of rules of communication, and of ethical and legal norms, (3) of role expectancies and of working regulations. Part of these determinants can have an effect via normative pressure or via further direct oppression.

I. FREEDOM AND FREE WILL: LINGUISTIC USE AND CONCEPTUAL EXPLICATION

1. 'FREE WILL' AND 'FREEDOM' REFERRING TO HUMAN BEINGS AND THEIR BEHAVIOR

We speak of 'free will' and of the 'freedom' of a *human being* or a person, *less so* of an animal (the more distant from primates it is in phylogenetic terms) and *not* of inanimate events of nature. It is meaningless to speak of the 'free will' or of the 'freedom' of an avalanche or of a flood.

One relates the free will of a person to his/her *intentions, plans, decisions, actions* and *results of these actions*. It is not very meaningful to talk of the 'free will' of a person with regard to certain incidents which occur to this person if he/she is shown to be incapable of "free will": to be conceived and born, to be caught up in an unanticipated earthquake, or to see a meteor falling from near by. 'Free will' presupposes a minimum of consciousness according to shared understanding.

2. 'UNFREEDOM' REFERRING TO MAN AND ANIMAL

One can call a Man or an animal in captivity, e.g. in jail or in a zoo, 'unfree'. Even in animals, the characteristics of deprivation can frequently be assessed objectively. One speaks of 'unfreedom' especially with reference to Man, e.g., in relation to the constraint on freedom of locomotion, thinking, action and social association. This particularly includes constraint, *imposed by other persons,* on organizing one's life, one's leisure time, one's social relations and on satisfying one's basic needs. See B.7(1).

The *constraints* which produce unfreedom can consist of regulations or laws, insufficient economic and unhealthy conditions of existence, or normative or group pressure. The mostly politically organized *means* of pro-

ducing unfreedom include: suppression, *coercion to certain acts,* terrorism and intolerance (cf. B.12C(5), B.12D, B.12E(1-3)). Unfreedom can be based *externally* on coercion *or internally* on indoctrination and unreasonable internalization (D.15). Correspondingly, free will is reduced or absent.

A special form of the reduction of free will is the removal of behavioral self-control under the influence of drugs, and of group inflammatory agitation (frequently in the sense of: 'responsible' for having entered the situation; 'diminished responsibility' in behavioral terms). Withholding consciousness produces unfreedom.

3. 'FREE WILL' REFERS TO SINGLE ACTIONS VS. LIFE CONTEXTS

1. Single action vs. action as part of a life context (example): One can speak of 'free will' quite meaningfully with regard to isolated decision-making or acting, e.g., where I should have breakfast tomorrow, or how I should vote in the next communal election. In the latter case of acting, one could speak also in a non-isolated form of how my act of voting becomes free will in the sense of a politically *coherent* consciousness of co-determination. A presupposition might be to consider if my political intentions and attitudes, my political perception, my options of choice, and possibly the attitudinal or programmatic explicitness of the party (or parties) considered, correspond to each other.

In both of these isolated cases, I have alternatives of decision (choice) available which are especially characteristic of free will. In the latter case, the criterion of one's clarification and clarity complements the criterion of choice. See D.0.2(4).

2. Situational vs. life-contextual (generalization): The concept of freedom and of free will can refer meaningfully, in a positive or negative way, *to single* situational *actions* (cf. also D.8c, in particular).

On the other hand, one can also talk about freedom and free will in the sense of a – self-organized, more or less coherent – *perspective or context of life.* The most meaningful way to talk about 'feeling of freedom' (D.10), 'experiencing freedom' (D.11(1)) and 'consciousness of freedom' (D.11(2-3)) is to consider not only single isolated actions, but also *their effect on the course of life and on directional orientation, or their contribution to capabilities* (i.e., in professional or educational terms). I then speak, for example, of 'freedom and free will in my life (or in a phase of my life)'. Cf. D.23/24, E.14 [Coherence], E.15 *[Further consequence];* E.V [Self-organization as procedure].

4. ATTRIBUTION OF SELF-DETERMINATION OR HETERO-DETERMINATION

1. Self-determination vs. hetero-determination self-attributed or hetero-attributed: 'Self-determination or hetero-determination' refers to the presence or absence of free will. One attributes free will to a person if the *control of action* rests with this person himself/herself (self-determination). He or she can attribute himself / herself with free will, or can 'feel that way'. One disputes the attribution of free will to a person if the control of this person's action rests with another ('hetero-determination'). *'Determination by chance'* can also be classified as a type of hetero-determination. The person concerned can even dispute the attribution of free will himself / herself, i.e., feel unfree, e.g., because he / she has to act under coercion, is continuously oppressed, or does not come to himself / herself anymore because of too much stress.

2. Structural determination as an established context of life: In this case, self-determination, hetero-determination and chance-determination are strongly *mixed.* These contexts can refer to personal developments or to long-term obligations, i.e., towards the family. Therefore, it can sometimes be difficult to determine the agency or the different agencies of controlling action. Long-term obligations (e.g., children, debts) which once were experienced as freedom of organizing one's life and which are now experienced as unfreedom, can be captured by means of this concept formation.

5. FREE WILL AS BECOMING AWARE OF CONTROLLING ACTION AND AS CONCOMITANT FEELING

Presence or absence of controlling action corresponds to "becoming aware" in *cognitive* terms, and to "concomitant feeling" in *affective* terms within the acting person. The first item is becoming aware of freedom, independence, autonomy or unfreedom, dependency. The second item is an accompanying positive or negative feeling: negatively, for example, complacency; indisposition; boredom; a feeling of suppression, of coercion, or of enslavement; positively, for example, objectivity, activation; satisfaction; joy; a feeling of freedom. See D.10 [Feeling-free], D.11 [Consciousness of freedom], D.0.2(5) [Cognitive vs. psychosomatic components].

6. FREE WILL EMBEDDED IN A SOCIAL ENVIRONMENT

Goals, tasks, decisions, and actions are, for the most part, *embedded in a social space of action;* they involve interacting partners, or directly or indirectly concerned third persons. In this respect, *ethical* criteria – for example, reciprocity – are to be applied to these action-related categories.

Interaction partner(s) and concerned third persons can be assigned to different social environments: a) partner or family; b) profession; c) friends or acquaintances; d) administrative personnel or community representatives; e) commercial partners and the like; f) crisis situations: war, illness, etc.

7. FREE WILL IN THE PRIVATE VS. THE SOCIAL SPHERE: SCOPES AND CONSTRAINTS IN THE BASIC DIMENSIONS OF FREEDOM

1. The role of the private vs. the social sphere: For the evaluation of the *degree of free will,* the following conceptual distinction is necessary:

a) A *private* sphere in which personal creation or self-organization and the experience of freedom can be especially developed but can also be extremely hindered: a despotic family situation, a depressing partnership, an indoctrinating legislation or the like.

b) A *social or more public* sphere, for example, in one's profession, or in politics in which participation or differing degrees of the right of co-determination might exist and in which a corresponding feeling of freedom or suppression might be experienced.

Firstly, very detailed *obligations* as in the professional sphere (possibly internalized and experienced consciously as *"(self-)responsibility"* [cf. D.11]) can be compensated in the private sphere, during leisure time, in terms of the conscious experience of freedom. Secondly, *work need not be experienced as "unfreedom".* Work "can be fun", can produce satisfaction and can be consciously experienced as freedom; this can be the case in even stronger terms against the background of having experienced unemployment or even simply *in contrast* to leisure.

Professional contracts of employment can be conceived *as rights* and can *thus* be experienced *as freedom. Constraints* in the contract of employment can be experienced *as unfreedom* and can become a *reason for resistance in terms of working rights* or for a *change in one's job.*

This depends upon the *internalized* and *conscious value system* and the details concerned with the same.

2. Basic dimensions of freedom: I propose the following dimensions as *basic dimensions of freedom* (or unfreedom): (1) psychological well-being, (2) health in medical terms, (3) material-existential welfare (cf. F.1, especially (1(5)); D.23). For self-organization, these basic dimensions of freedom are to be applied according to E.5 to intimate, work, and general social relations, and, in addition, to leisure time, the formation of interests, living, eating and drinking.

3. Constraints vs. scope; self-structuring: Constraints are here defined as stress, time factor, i.e., lack of time or wasted time, dependency, uncertainty, i.e., short-term work perspectives, deprivations or withholding of rights, unconsciousness, lack of concentration or of energy. Such constraints can then tend to be experienced as unfreedom. *Scope* is then defined as leisure, energy, independence, information or access to certain resources and support, and as entitlements. Such scope tends to be experienced as freedom. Going further, *freedom is psychologically defined as experience* by means of direction (of life), structuring, perspective-spatial depth (i.e., on a long-term basis) in the sense of D.10(2/3) and D.11, or in keywords: by means of one's existing structures, interests, plans or projects (cf. E.25 [Focus]), by one's consciousness of future ("freedom" is not the past), by one's capabilities, by one's *capability to act* (cf. D.16(5); E.31(3)).

8. THE CONCEPT OF FREEDOM AS A FORMAL LINGUISTIC RELATION

The concept of "freedom" consists in *relations* defined as follows:

a) *"Freedom from [s.th.]":* e.g., from considering certain people or certain criteria or the like; particularly: from the obligation or coercion to carry out certain acts, from orders, and from certain tasks ("I do not need to worry about that"). This is primarily a matter of *freedom from obligations or role expectancies.*

b) *"Freedom to [do s.th.]":* e.g., to make decisions, to carry out certain actions (in the sense of a *permission*); to dedicate oneself to do s.th.; to have the time for it. *Leisure time* is available to pursue one's personal interests, to organize one's life and every day activities in personal terms, to devote oneself to a self-determined field of tasks. The *means* for that are available. This is primarily a matter of *freedom to achieve one's organization of life.*

c) *"Freedom in participating in [decision-making and action]":* Decisions and actions are imminent, are possibly *not in all* their components self-arranged and self-chosen. I then speak of *'(degree of) freedom in contributing and participating in a context of action'.* These are freedoms in

task solving, in exercising a profession, or in *work,* in a *role,* which requires the cooperation of several persons. Freedom of the choice of goals is a separate issue.

The explication of the "relation(s) of freedom" can be used as heuristic procedures. One shall specify the relations of freedom for the case under consideration, or for the time period to be considered.

9. ON THE CONCEPT OF FREE WILL AND ITS EXTENT

The components which determine free will in its extent in heuristic terms include:

a) The *avoidability* of tasks, goals, decisions, actions (i.e., *ethically,* something is left to someone's discretion, need not be heeded; or *in terms of analyzing daily life,* something is unnecessary or can be ignored).

b) The *unavoidability* of tasks, goals, decisions, actions (i.e., *ethically,* s.th. is mandatory, must be heeded; or *in terms of analyzing daily life,* to forget s.th. or to have no motivation for doing s.th., has unagreeable consequences if one doesn't do it (for example, to have no bread because one did not want to make a detour of half a block in order to buy some).

c) One's *striving for* tasks, goals, decisions, actions, or intentions thereof (i.e., the presupposition concerning this is viewed *ethically:* the *permission* to do s.th.; or *in terms of analyzing daily life:* the *leisure time or* the *scope of self-organization* to do s.th.; or *in terms of the psychology of personality:* the *capability* to do s.th. Generally, capability is acquired by learning. Capability includes information, skill, or performance; the scope of self-organization includes self-perception, ideas and opportunity. The scope of self-organization is, moreover, determined, for example, by *conditions* of the work place or the living or leisure place.

d) Obstacles, hindrances, preventions of tasks, goals, decisions, and actions can have different origins: they can relate, for example, to *political mechanisms of suppression* and to bureaucratic working regulations. They can, moreover, consist in my *deficient education,* in possible *handicaps,* or in my personal situation to *not* have *enough time* or to have *no* access to certain *resources.*

One should note that the following categories are distinguished here: ethical *norms* (commandments, prohibitions, permissions) and *obligations* (in the sense of role expectations and social rules); *personal capabilities* and (for instance, monetary) *requirements or the means* to organize daily life; and *situational opportunities.* This corresponds partially to von Wrights (1980: 13) distinction between "can (=ability)" and "can (=opportunity)". See Heider 1958:84ff. In addition, one should note here, that "free will" is

introduced *as a heuristic procedure.* By means of this procedure, the scope of intentional or volitional formation, of decision-making and of acting can be checked, assessed and inventoried.

II. FREEDOM AND FREE WILL: PSYCHOSOMATIC-PRAGMATIC ASPECT

10. "TO FEEL FREE" / A THEORETICAL OUTLINE

1. Explication: In contrast to a possible collective 'feeling of freedom', 'to feel free' is for the time meant subjectively. 'To feel free' means: no blackmail and *no coercion* by other persons; no loss in terms of health, no torture, no excessive stress, *no damage* for oneself, with the exception of the case of internalized norms, or in exceptional situations which one wants consciously oneself and/or which one accepts oneself in favor of third persons, or in favor of a self-determined field of tasks or programs; moreover: no surfeit, no boredom, i.e., *no monotony.* The concept "to feel free" has so far been negatively defined.

2. Deepening: The feeling of freedom increases if anchored in motivation, in the experience of resistance, in a life plan and in a relevant, coherent daily life which is meaningful and free from the stress of survival. It can also mean to feel free from other persons "who take one's breath away". To feel free is deepened and founded in the consciousness thereof and in the translation into self-organization (cf. D.11).

3. Theoretical outline: "To feel free" is *an existential condition* of Man in anthropological, biomedical, and *psychosomatic terms.* We are dealing with an electrophysiologically basic tonic effect which corresponds to a general *improvement of the bioenergetic level:* adequate blood supply and functions of the muscle system; wakefulness and attention; cheerfulness, hope, and an orientation towards goals, tasks and "future". Readiness and capability to think and to act are improved by means of this basic tonic state. The absence of depression and catathymia is a consequence of this basic tonic state. 'To feel free' can thus refer to the psychosomatic components of the *physiological system, of consciousness, of positive affect or motivation and of cognitive content.* The impression that one is helpless *(heterodetermination or chance-determination)* is potentially *deadly* (cf. E.18; E. Langer 1974).

11. "EXPERIENCING FREEDOM" AND CONSCIOUSNESS OF FREEDOM

1. Experience of freedom as action: Experience of freedom refers focally to *action* and to *contexts of action* in contrast to a basically heightening and tonic feeling of freedom in physiological terms. Experience of freedom here means, pragmatically, to develop, to hold, and to apply the components conceptually determined in D.7(1/2). *Points of reference of experiencing freedom* are, according to E.5-7, partnership, family, profession or work, future, housing (apartment), eating, formation of interests, free time and the like, according to B.11, the community as a focus of integration. To "experience freedom" could mean: to participate within a *social* frame and to realize freedom, also within the framework of the social and legal state with its achievements and guarantees. In addition: to exercise *self-determination and self-responsibility* in action consciously, and to attain *"experience of achievement and of self-organization or arrangement"* in one's personal domain of work or action. Fulfillment, tasteful enjoyment, joy and self-initiated action can belong to the experience of freedom.

2. Consciousness of freedom as a deepening experience of freedom: A deepening experience of freedom is brought about *by information* which becomes *consciousness:* of the *consequences of doing,* of *alternatives of conceptualizing and acting,* of *contexts otherwise* (i.e., to perceive facts as being non-isolated). The consciousness of perspective and life direction produces motivation and activates. A "deepened experience of freedom" can then consist of the perception of oneself in the social environmental field and of the conditions of this social environmental field (cf. D.6/7/10; D.23), or in the *self-perception of one's capability of self-organization.* This might also include the perception of responsibility. The social environmental field and the corresponding consciousness of freedom can be expanded to a global (reciprocal) comprehension. See A.21 [Cultural relativism and its limits]; F.3/4 [Solidarity "close" vs. "distant"]. The consciousness of freedom includes *comparison* with alternatives, e.g., negatively with dictatorship, dependency, unfreedom, intolerance, antisocial behavior, or even positively with possibilities for development in contrast to existing conditions. For that, *consciousness of one's own form of life,* of daily life, of the political and social system is required (cf. D.23/24).

3. Consciousness of freedom as resistance and combat: The possible loss of freedom (factually or as a menace) leads to resistance. *Resistance and combat* are special steps in the consciousness of freedom and the feeling of freedom. One's own *memory* of freedom and unfreedom ('to have felt free or unfree') is important and can be the basis of one's own *identity. Historic points of reference* can be a collective as well as an individual *cause to contemplate again* on liberation and on basic values which co-determine freedom and make free

will possible (e.g., May 8 [1945: the unconditional surrender of Germany and the end of Nazi terror] and July 14 [1789: the start of the French Revolution with the storming of the Bastille] in France). This is even true in case of the absence of a collective tradition of freedom.– See E.14(4) [Sense of coherence] and G.3(2) [Collective resistance].

12. FREEDOM AS A BURDEN OF DECISION-MAKING: ITS REASONABLE REDUCTION / STRESSORS AS CONSTRAINTS OF FREEDOM

1. The burden of decision-making and its reasonable reduction: Freedom in decision-making and in acting can even be experienced as a strain, in the sense of a burden of decision-making, and of disagreeable responsibility. The burden of decision-making can be experienced as paralysis or *incapability of action.* Burdens of decision-making require their *reasonable reduction.* This means, for example, the reasonable dissolution of dilemmas in making decisions. The *rationality* herein consists of *criteria,* in their reflection, in the deliberation of *alternatives* to these criteria, and in the disposition to change them. The consideration of changing them would be based upon (1) an analysis of the consequences of their application (Are these consequences really wanted?); and (2) upon a discussion in terms of metaethics (What is the goal of ethics? For example, Man being able to comply with it, in principle, no religious utopia; reciprocity, i.e., the subordination of authority under reciprocity). See F.1(4) and criteria in D.18; D.19.

2. Stressors as constraints of freedom: Hans Selye distinguishes general from (situation) specific stressors (in: Hamilton & Warburton 1979). See D.0.2(5) [Psychosomatic component = stressor].

Stressors are conceived as being blockers or as burdens in the "central processor" (attention, short-term memory, working memory). In detail, we can deal with deficient leisure/rest, deadlines considered to be important, disturbances of bio-social rhythms, the deficient coordination of different behavioral processes (E.28(4)) and disruptions as a disturbance of goal pursuit and coherence (G. Mandler in: Hamilton & Warburton 1979).

This means, in detail: (1) Burdens of decision-making (and in analogy, burdens of expectancies, and of goal fulfillment) can have an effect as stressors. (2) Stressors can concern situations or expected states which have to do with one's own existence, with one's own survival, with one's own permanent perspective and, as a result, with existential fear or with the "essentials" of one's own value system. (3) Stressors can then easily couple on to the alarm, control and – especially – self-esteem system. The

latter has as a monitor reinforcing or imposing function (E.17/18). (4) In regulative or therapeutical terms, the reasonable reduction of stressors is striven for. This includes: their rational cognitive analysis; the construction of ["understandable", reasonable] arguments (cf. D.0.2(5)); the sequence of self-stabilizing steps according to E.27(5) [i.e., the restoration of (a) health and (b) concentration, (c) the formation of a focus]; if necessary, as behavioral self-modification, to train the factual translation into action. I do assume that arguments can dissolve (certain) stressors. This leads to the following ideas: (1) Neutralizing stressors by arguments, analyses of consequences, raising consciousness and addressable consciousness deepens the feeling of freedom, the experience of freedom, and, generally, the perception of freedom in the sense of D.10/11. (2) Together with an attitude of hope and future, i.e., a long-term perspective towards one's life, this neutralization of stressors contributes, hypothetically, to the basic tonic effect as described in D.10. This has to be viewed in conjunction with the above arguments on self-esteem as a monitor. (3) The removal of the disturbances in or interruptions of a sequence of actions (for example, because of a lack of discipline of the action partners) can eliminate stress. *Theory of freedom and theory of stress complement each other.* See D.2. See Tomkins III/1991:14 ("much ... 'stress' is indeed backed-up affect...").

III. FREEDOM AND FREE WILL: PRAGMATICAL PROBLEMS

13. FREE WILL IS NOT ARBITRARINESS: ITS RELATIVIZATION

Free will is not arbitrariness. Experiencing freedom in decision-making and acting is *not arbitrariness,* an inconsiderate option, a negative affect (e.g., hate), *unobjectivity, cheating* or other forms of *injustice.* The relativization of "freedom" and "free will" implies the view and the interest of second or third persons: the *criteria of reciprocity and of the non-damaging* of other persons by one's own decisions. On the other hand, one has to avoid hurting oneself under group pressure (i.e., to act unjustly against oneself). Cf. D.18.

14. TRAPS IN TERMS OF THE IDEOLOGY OF FREEDOM

Relativization also includes the elimination of ideological traps. Examples are (1) the reference to *unlimited* freedom which tends, of course,

to be bound to fortune, power, or even legal unrestrainedness, or (2) the false pretense of free will while withholding critical information, and information concerning possible decision-making alternatives; i.e., the embedding of freedom and free will into a social and legal environment, the integration into an informing and informed society (free press, rights of information) and into a constitution (general mutuality and validity as a basis of legitimation) are fundamental points of reference. Speaking of freedom and free will *without these relativizations and corrections means to use propagandistically empty formulas.* This includes such formulas as: Freedom is the insight into necessity (Marx). The focus of experience and of the attribution of free will and of freedom is ego. This focus can be relative (mere participation), it will not be eliminated: *the experiencing ego remains the ego,* and will not become the group, the state, the nation, the party, or a figure having political or religious leadership.

15. INTERNALIZATION VS. REFUSAL OF APPROPRIATION OF NORMS: "INNER FREEDOM" AND "INNER UNFREEDOM"

1. Self-alienation: According to G.H. von Wright, complications include "pseudo-freedom" in the form of internalizing *alienated* goals, decisions and actions which cannot become one's own and which, for example, correspond to party-line thinking or to ideological indoctrination. In this case, *norms* are internalized which *prevent or destroy one's own freedom* and which alienate the believer from himself or herself. This self-alienation can, for example, consist in the adaptation to an authoritarian style of education, to a withdrawal of information, to suppressing thorough thought about alternatives, in the mixing-up of ego and "authority", i.e. in an uncontrolled self-identification with government, party, church elders or religious leadership.

2. Refusal: The reversal consists in the refusal of the inner appropriation of norms, goals, decisions and actions (according to G.H. von Wright 1971). From the perspective of an authoritarian or dictatorial state, this refusal is regarded as a criminal offense. From the perspective of a democratic state, it is something to be seen with indignation or as an "insult". From the perspective of the individual concerned, the refusal is seen as being self-conscious and *resistant* or thoughtful and perhaps internally guided (cf. D. Riesman), possibly in conjunction with certain disadvantages.

3. The internalization of ethical norms and of group rules means to accept them and to make them part of one's own identity and, as a result, of one's own personality. *In the good sense* ("reasonable norms") *as well as in the*

bad sense ("unreasonable group rules or norms"), this normally implies a reduction of *experienced* coercion or of *experienced* unfreedom.

4. Internalization and "inner freedom": The degree of the internalization of "reasonable" ethical norms (i.e., of reciprocity) determines feelings or the consciousness of inner freedom. The degree of *resistance to group pressure* and to the internalization of "unreasonable" group rules *determines* the feeling or consciousness of experienced coercion (of manifest or attempted unfreedom), and of *inner freedom in contrast to and as a cognitive buffer of this exterior coercion.*

5. Internalization and "inner unfreedom": The degree of the internalization of group rules which bring about self-alienation, which prevent personality development, and which hinder social association, corresponds to the *degree of inner unfreedom.* However, such an internalization reduces a possible feeling of otherwise experienced unfreedom. This means, "inner unfreedom" is distinguished from "(*actually*) experienced unfreedom" (von Wright 1980:47: "unfreedom of coercion, normative pressure" ['experienced unfreedom from outside'] vs. "unfreedom of submission, internalization" ['inner unfreedom']. Von Wright (1980:47f.) refers to social criticism as being an instrument of raising consciousness and the possible changing of inner unfreedom.

16. ADDENDUM: EXPLICATION AND PRAGMATICS OF "INNER FREEDOM"

1. Conceptual explication of "inner freedom" (supplementing the conceptual explications in D.4-9, 10-13): Inner freedom is explicated as the "consciousness of one's autonomous decisions and a decisive force to follow *reciprocal* norms, even under the condition of resistance to group or normative pressure, or against external coercion, or in contrast to it." The internalization of this norm differs from the acceptance of negative group rules in the following terms: A *series of criteria* is checked in the process of forming one's attitude towards social conditions and of making decisions on certain social acts. These criteria are checked *by means of conscience.* They are described and justified in detail in D.18, F.1(0-1), F.2(1) [Condition of social association and survival]. Cf. F.1.2. The problem of vagueness and of the margin of decision-making in that context is not central but is subordinated to the production of a subjective capability of action ("no utopian ethics"). However, cf. the note on optimization of decision-making in D.0.2(4) ("no arbitrariness", "justice").

2. Identity includes "inner freedom": The capability to achieve *inner freedom* individually, even under the condition of group or normative pres-

sure, is part of *one's identity and personality*. The individual is defined as being self-conscious and socially conscious. For that, the arguments in E.19 (thesis 2, 3), E.13(1-3), D.23, D.6, D.15 are pertinent. The acceptance of an "unreasonable group rule or norm" is rejected. A thoughtful, "reasonable" line (= one's own identity) for the criteria of decision-making and of acting *is upheld.* The sharpness of the consciousness of one's identity is reinforced by the experience of conflict, contrast and resistance.

3. Inner freedom as a cognitive buffer (according D.15(4)): Criteria of checking, explicit reasons and precision of arguments contribute to gaining *inner distance* and to achieving one's *self-assurance in judgement.* To produce inner freedom means to *enter into a state of consciousness of justice,* under conditions of resistance. The consciousness of justice implies, in substance, the inner, possibly even abstract (i.e., imagined), affiliation with legally thinking, social, and reasonable human beings, and leads to calmness, even in the face of isolation, disadvantage, and perils. See E.33 [Peace of mind].

4. "Inner freedom" vs. chaos: "Inner freedom" is also explicated as a perceived and conscious ability to organize one's life and to produce fantasy or, rather, (new) ideas. Inner freedom consists in inner distance to chaos and stress, and in resistance to time pressure, cliché and overstimulation, especially during leisure time. See E.25. The contrast to chaos – chaos in the sense of an "inner mess" – can consist, in increased readiness to come up with ideas, to think and to act (cf. the thoughts on removing stress in E.27). Summary: *"Inner freedom"* is a *"consciousness of ordering composition"* under the condition of resistance against inner and outer stress; i.e., a process of self-organization corresponds to this aspect of consciousness (cf. E.V-VII).

5. Deepened capability of acting: The convergence of items 1.-3. and 4. consists in the fact that inner freedom *reinforces overview, objectivity and task-orientation* in both individual and social action, and *produces a deepened capability of acting* (E.31(3), D.7(2); E.27-29 [Removal of disturbances]). This convergence is not to be confused with an irrational experience of conversion.

IV. REGULATORS OF FREEDOM, FREE WILL AND GROUP PRESSURE

17. ACTIONS OF CORRECTION AND DEFENSE IN VIEW OF ONE'S OWN, AND OTHER PERSONS' FATE

Non-trivial specialties of the concepts of freedom and free will are actions of correction and defense (1) *in view of one's own personal fate* and (2) *in view of other persons' fate*. (1) represents the possibility of one's learning and the defense of one's own interests and achievements, as well as one's defense against the wrongdoing of second or third persons. (2) is action in solidarity and defense in favor of second and third persons against injustice and antisocial behavior [of fourth persons]. In principle, the freedom of the other person is one's own and vice versa. In most cases, it is possible to react towards the incidents of distress and injustice, the illness or accident which happened to the other person. Cf. F.1(2) [Interdict of delegation of acting], F.2(4) [Social consciousness]; A.19. Complications include cases of *conflict* in which social or group harmony gets disturbed. This aspect is of special importance in terms of pushing through one's own, or third persons', rights. In addition, this includes cases of *extreme situations,* e.g., of one's own fault or one's own or other persons' dangers to life. See also F.5.1(4) [Extreme case].

18. FREE WILL IS SUBORDINATED TO THE CONSCIENCE (CRITERIA OF RELATIVE RATIONALITY) / ROLE OF CRITERIA OF SELF-ORGANIZATION

1. Free will implies non-arbitrariness: Free will is subordinated to conscience. Goals, decisions, and actions *can be planned* according to ethical criteria, and the consequences can be deliberated *in advance.* Conscience consists of *relative rationality in accordance with criteria.* The latter consist, e.g., in *objectivity* [E.13(1(especially 4))], *legality* [F.1(3, 5); F.1.2g; F.2(1-2); B.7(4)], *justice* [B.6; F.1(see: (3)); E.13(2)], *truth finding* [E.13(1 (especially 1)); F.2(1-2)], *conscious social sense* [E.13(2 / 3(3-4;7-11))], *self-interest or personal benefit* [e.g., E.10; cf. B.7(2)]. Cases of conflict are decisions in which the acceptance of *unjust advantages* is deliberated. The arbitrary-free concept of free will implies that such unjust advantages have to be subordinated in the individual case to the above mentioned criteria, which are finally to be reduced to the very central criterion of reciprocity.

See for details the heuristic *table of decision* and its interpretation in F.1(0-2); F.2(1), F.5.2(1) [Substitution probe].

2. Criteria of rationality: Referring to the above criteria, *"free from arbitrariness" and "reciprocal" are metacriteria for developing a concept of rationality, which lies at the basis of free will in the social environment and of the conscience, but also of self-organization and epistemic knowledge in general (incl. science).* In accordance with D.18(1), the following reasons for the relative rationality of free will and its conceptual metacriteria can be given: (a) Capability of acting within the social environment and in reality in general, (b) personal perspective of (social) survival, (c) the ability of coherent, non-erratic and continuous development. See Grice's maxims (B.7(3)) as conditions for communication. The naive beliefs about "social environment" and "reality" are submitted to *cultural evolution* according to the criteria in E.13 and D.23/24. See B.12D/E. Criteria for scientific statements in terms of the philosophy of science (containing information, being true, being intersubjective) resemble the two metacriteria.

3. Criteria of self-organization: Criteria of relative rationality organize decision-making and, *correspondingly*, *free will as a decision-maker. Criteria of self-organization help to co-determine and to organize plans, projects, and programs in substantial terms and, correspondingly, free will as a planner and self-organizer.* This means, reference to *goals, tasks and problems* is likewise implied. This fact could lead us to understand criteria of self-organization, likewise, as criteria of relative rationality, or else possibly as auxiliary criteria for that. Criteria and concepts of self-organization are explicated primarily in E.V [Self-organization as optimized procedures] and deepened in H.2 [Suggestions] and H.3.5 [Problem development]. See A.16.

19. THE ABILITY OF RESPONSIBLE DECISION-MAKING

From the conscientious regulation of free will and freedom follows: for one's decisions and actions, one has to assume responsibility. They have to be defended in one's inner mind, in terms of the criteria mentioned, as in the case of facing a controlling authority which demands of one to account for them. The ability of taking responsible decisions and actions require *adequate information* for assessing goals and actions, i.e., the *access* to such information and the *capability to carry out its critical processing.* This might include persistence to get the necessary information. In addition, it includes the acceptance and acknowledgement of one's own authorship and effective agency when deciding and acting, i.e., *no veiling* of

one's decisions and of one's person as an agent in decision-making. This also implies a self-initiated representation of this insight in view of other persons.

See F.1(1(6)) [Responsibility in corporate or state organizations].

20. GROUP PRESSURE AND ROLE REFLECTION AS ITS REGULATOR

1. Role reflection and group processes: Freedom and free will are centrally connected with the ability of having resistance in judgement and in action. Freedom and free will can refer to a group or to a corresponding social environment. The reflection of group processes helps in responsible decision-making and acting. This reflection concerns the *relationship between ego* (as a decision-maker or co-decision-maker), the *group,* possibly *third persons concerned,* and imminent *problems or decisions.* Role comprehension thus achieved can, for example, include the possibility of choosing and optimizing a role (D.0.2(4)). One's role and the role relationships implied *can be made conscious by means of* imagined *contrastive criteria:* just, objective (vs. unjust, unobjective) and, in E. Berne's sense, egalitarian or reciprocal (vs. dominant or submissive). See B.8(2).

2. Group pressure and normative pressure: Group pressure tends to be a force which is directed against individual freedom and against individual free will. Considering role conflicts and normative or group pressure – for example, to be supposed to do something incompatible with one's conscience –, *resistance* within one's group of reference has to be practiced. The ability to suspend one's (value) judgement or decision temporarily, i.e., with reference to others or in favor of others, can be an important technique. Group pressure is a special form of *normative pressure* (cf. R. Rommetveit; von Wright 1980:44f.: institutionalized rules of behavior).

21. DEVELOPMENT OF SELF-CONSCIOUSNESS

Role reflection includes the development of self-consciousness in experience and in the exercise of free will, decision-making and resistance. Self-regard, or rather *self-esteem,* functions as a monitor: to feel well, to coincide with oneself: e.g., to be able to react to harm, to be able to react in defense or to decide in congruence with one's conscience and one's self-image. *Conscience, self-image, feeling of self-esteem* and *reaction* form a *balance of thinking;* they make up for *self-consciousness.* Put explicitly: I do have a conscience as a regulator; my self-image includes the idea that I

want to continue as a just person. My self-esteem implies that I note, correct, and control in correspondence to conscience and self-image. Thus, I am always capable of reaction and action. See E.19 (Th.6).

Self-consciousness includes the development of reflection on *one's achievements, and on one's possibilities, one's limits, and one's ability of pushing through* with regard to decision-making and action. Self-consciousness, self-esteem, and free will converge substantially in conflict, in experience of resistance. See E.17 [Self-esteem as monitor].

22. REGULATORS OF FREEDOM AND OF FREE WILL: ETHICS (RECIPROCITY), FOCUS (SELF-ORGANIZATION)

It is assumed that somebody already has available freedom and free will (in the sense of the conditions in D.9c [Leisure, ability, opportunity of action] and in D.10(3) [Health, energy]; cf. D.23).

Freedom is interpreted *as the possibility* of intention formation and of action *(i.e. the scope of self-organization)*. *Free will* is *goal-determined* and refers to single acts and to life contexts (cf. D.3) and represents a *mechanism of producing the ability to act.*

A regulator of free will in the domain of one's organization of life consists of *self-organizing criteria.* These criteria aid the *development of a life plan or of daily life planning* (E.22-23), and the *formation of a focus* (E.25); i.e., this regulator organizes free will *"as a planner"*. The *independent development of one's interests and problems* or structures serves as a regulating basis hereof (H.; cf. the item "impersonal interests" in the sense of Russell, E.22(2)). Independence is here primarily grounded in freedom of choice (D.0.2(4)) and in learning by doing (E.22(5)). See E.31.

Moreover, regulators of free will include *conscience, or, rather, ethics,* which rests on reciprocity (F.). *Reciprocity* constitutes an important regulator of free will in the domain of social action. (D.6, D.13). This regulator organizes free will *as a decision-maker.* I assume that the reciprocity of man and woman in sexual union likewise functions as a regulator. This depends on mutual consciousness and on both partners' convergent ability of composing sexual union (I.0.2, I.3.3 and I.3.4). We could deal with a case in which reciprocity and the ability to structure or organize combine functions as regulators.

Work contracts and (public) *duties* could be regulators of freedom and free will. *Even* in this case they are subordinated to the above mentioned regulators of freedom, i.e. at least conscience or *reciprocity* and supposedly also *self-organization* in the sense of making freedom possible, i.e. leading to (economic) existence in freedom (E.9/10, D.23; F.1.2). See

E.22(4) [Reciprocity, consensus, convergence]. I interpret consensus and convergence as additional aspects of reciprocity in shared and cooperative (also economical) social association. According to D.13, one should bear in mind the criterion of non-harm. See B.6 (2) [Reciprocity-B] and (3) [Solidarity and reciprocity integrated].

The regulators of freedom and free will can then be reduced (1) interactively to "reciprocity", and (2) with reference to a task, or thematically to the "ability of structuring or composition", or to "(principles of) self-organization".

V. PERSPECTIVE OF DEVELOPMENT

23. EDUCATIONAL, SOCIAL, POLITICAL PRECONDITIONS OF FREEDOM

The use of freedom or of free will is *learned.* In this sense, *education towards freedom or free will* is the precondition for both. Independence or autonomy (E.31), the ability of carrying out the self-organization of one's life (E.IV-VII), also in the sense of the ability of developing and satisfying one's needs [B.6(1); E., H.], social capability [B.] – inter alia, the use of conscience [E.13(2-3), F.] –, analytical consciousness [E.13(1)] and a democratic attitude in life as a political philosophy [E.9] are *highest-order learning objectives:* Ego, the other person, third persons, and nature are to be conceptualized reasonably. As a very fertile outline of a perspective of individualizable development, cf. J. Galtung 1980 [Freedom & identity]. See M. Bunge 1989 and F.7.

Social preconditions for practicing free will include *existential and social security* against distress, including unemployment and illness, and in old age: i.e. the security of satisfying the basic needs of everybody (Galtung 1980 [Basic needs]) and the liberation from the stress of survival which is adverse to health and to new ideas. These social preconditions are translated into unemployment insurance, health insurance, pension schemes and entitlements, as well as into regulations of working rights in modern occidental democratic societies (cf. state goals in F.1.2). Existential preconditions probably include the right to work (at least to be mentioned as a state goal in the preamble of the constitution) and definitely the right to one's inviolable apartment, as well as the right to freedom of movement. The *political preconditions* include democracy as the political form of the organization which safeguards the exercising of the rights of freedom. They include, explicitly, a functioning constitutional system for the administration of justice. Moreover, they include the opportunity of having ac-

cess to critical information, and of co-determining decisions which influence one's daily life and which determine one's life directly.

Without these preconditions for the use of freedom, as outlined here, it tends to be unachievable, and to remain an empty phrase.– Cf. Sen 1999, E.8, Note 1.

24. FREEDOM AS A COHERENT FORM OF LIFE

1. Coherence as feedback between one's organization of life and social form: In accordance with D.23, "freedom" is a concept which refers to coherence in individual and social structures. As *"Coherence"* we interpret the *reinforcing feedback or coupling of self-determined, individual daily life,* the individual *awareness of life* and individual conception of life on the one hand, with *free social and political form of organization* on the other. Everyday life is experienced as meaningful and not as chaotic, arbitrary and alienated, or hetero-determined. The awareness of life and conception of life are based upon free will and freedom for the self-organization of one's life which can build upon experience and the formation of resistance. The social and political form of organization exists *as reality* in democracy, in the social and constitutional state, or in the fight for these ideals, and *as a perspective* in further development and the possible realization of rights of freedom, social rights, rights to resistance and rights to information, with limits towards others or third persons.

We thus deal with a *feedback* in the following sense: Free human beings are the precondition for the freedom-supporting forms of organization (especially within the system of education); and these tend to be the precondition for human beings who are able to use freedom and free will.

2. Need for freedom and "new freedoms": The legal development of "new" freedoms is referred to in F.1(5) [Rule of conflict resolution] and in F.1.1 [Considerations] and F.1.2e [Individual development]. The personal development of life concepts as the development of freedom is discussed in detail in E.V/VII. Galtung (1980/V:412) characterizes the *need for freedom* and *its further development* in a contribution [Freedom & identity] in the sense of a coherent form of life and consciousness with the following dimensions of features:

"Social justice
human rights
togetherness, friendship, love, sex
free time, i.e. unprogrammed time
new experience, new challenge, new inputs
well-being, a sense of happiness

joy, giving joys to others
a sense of meaning of life, of existence
self-realization, realizing one's potentials"

This list can be interpreted as a personal or social program of identity development or as a catalog of criteria for the critical evaluation of the state/condition of society.

25. THE CONCEPT OF FREE WILL INTERPRETED AS PROCEDURES OF INDIVIDUAL DEVELOPMENT

0. The idea of procedures: The concepts of "freedom" and "free will" can be specified as being a heuristic procedure. The criteria of relative rationality (= "conscience") organize free will as a decision-maker. Criteria of self-organization organize free will as a planner (D.18; F.1). See (6) below. This means, we try to *develop free will as the ability to act*. We could also say: In using these criteria, we *transform* [the ideas or conceptualizations of] freedom (cf. D.0.2(2)) and free will (cf. D.0.2(3-7)) *into* existential decision-making or into personal *development,* in terms of content, perspective, capability and / or accomplishment. This might, however, still be far away from an interpersonal comparison or quantification.

1. Individual development in procedural terms:

(1) First of all, we check, according to D.3, to see *if* we are dealing with *single acts or whole contexts of life.* Generally, for *producing the ability to act,* see E.31(especially 3 [Independence]) and item (4) below.

(2) For the discussion and *development of contexts of life,* the following paragraphs could be relevant in operative or organizational terms: H.1/2 [Stimulation of fantasy], E.5 [Dimensions of daily life & course of life], E6/7; E.11-19 [History of life, capability, identity]; E.22 [Criteria for life design], E.23 [Operative concepts: life plan; daily life planning]; E.25 [Focus]-28 [Self-stabilization]; H.3.5 [Scientific problem].

(3) *Life contexts* or imminent *single acts determined in terms of content* are *examined* according to D.7 [Scope vs. constraints; basic dimensions in medical, psychological, material terms; direction of life, capabilities], D.8 [Freedom "from-", "to-", "in contributing to- / in participating in-"], D.9 [Avoidability, unavoidability, striving for, impediments].

(4) In considering a *clarification of a developmental direction in principle or an inventory* of possible ideas as well as specific contexts of life and even single acts, examine the following references in psychosomatic and cognitive terms: D.10 [*Feeling free:* no coercion, damage, boredom; grounding in motivation; orientation towards goals, tasks, future]; D.11

[*Consciousness and experience of freedom:* self-responsibility, consciousness by information]; D.12 [Reasonable reduction of *the burden of decision;* stressors]. See G.2 [Sense of survival]: examine, for instance, the "conditions of life".

(5) With regard to the *acceptance or internalization of (social) norms or criteria of decision-making,* cf. heuristically D.15/16. See also E.13 [Cognitive, moral, social judgement]. The special conditions of group or normative pressure and the development of *resistance* against such pressure are further elaborated on in D.17 and 19-22. See E.17/18 [Self-esteem / resistance]. See D.18(1-2) and F.1 in terms of *content*.

(6) In the *case of decision-making* D.18 [Conscience as criteria of relative rationality; criteria of self-organization] or rather F.1(0-2) [Operationalization by means of a *decision table*] is to *be applied.* See E.22 [Criteria].

(7) Note that (5) refers to a metalevel, i.e. the conscious *acceptance* and *internalization* of social norms, and (6) to their *application*. (2), (3), (4) refer to procedures, parameters and the psychosomatic *factors of personal development* in terms of free will.

(8) Critique, the search for alternatives and modifications (as new forms of freedom) form a special metalevel which includes: the allocation of time and attention (effort); the testing or examination of implications, especially of actual or anticipated solutions ("Do we really want the consequences?"). This level includes the consideration of factual issues, planning, behavioral norms and even affects (for the latter, cf. E.22(8) in elaboration of A.9(5); cf. E.17 [Self-esteem]). See also D.18(2-3) [Metacriteria]. Critique and the search for alternatives are self-organizing principles or capabilities [cf. E.13(1(9))]. They can enlarge one's freedom and free will.

2. Free will in procedural terms: The Property Matrix (Table 1) tries to summarize a part of the points of view. As *dimensions* of free will, the formation of goals and plans (i.e., perspectives), intentions and decisions, and the execution of actions are distinguished. As *criteria* of free will, autonomy, leisure (reduction of stress), and scope vs. constraint are distinguished.

FREE WILL ***Dimensions►*** **Criteria ▼**	***Formation of perspective = interest(s), goal(s), plan***	***Formation of intention***	***Formation of decision***	***Execution of action***
Autonomy	Integration of identity components; conscious ego (E.31; cf. E.13)	Focus / integration (E.25)	Critical ability / independent opinion / integrity (E.31(2/3); D.18, F.1(0))	Holding the schemata of action (A.III; cf. F.1(0))
Leisure / reduced stress	± Focus (E.31)	± Focus / buffer (cf. E.25(5); E.27(4))	± Reduction of the burden of decision (D.12)	± Adequate time (D.7, D.12(2))
Scope	Means / opportunities / norm / ability / information (+) (D.9)	Want / need / self-organization / self-responsibility / [work contract (+)] (D.0.3(1); D.18-19)	Help, counsel; information; "conscience" (cf. E.14(4), E.30; D.14, E.13(1); D.18 & F.1(0)	Want / adequate means (+) (cf. D.0.3(4); D.18 & F.1(0))
Constraint	Means / opportunities / norm / ability / information (–) (D.9)	Obligation / work contract (–) / cooperation (D.0.3(1), D.22)	External pressure (cf. D.0.3(4))	Adequate means (–); norms, pressure, terror (D.0.3(4), D.18, F.1(0))

Table 1: Property Matrix of criteria and dimensions of free will in considering perspectives, in forming intentions and decisions, and in action
(+ = feature present; norms: permission); – = feature absent; norms: prohibition (or commandment); ± = feature more or less present

3. Freedom in procedural terms: The Property Matrix (Table 2): According to D.0.2(2) I distinguish, *as relations of freedom,* between (a) the recognition or *discernment* of scope and / or constraint of freedom, (b) the procedural *production* of freedom, (c) the *use* of freedom. Moreover, I distinguish, *as components,* between "methods" of *dealing with* the specific type of freedom relation and "structures" (as content or "objects" of the specific freedom relation) to *make use of* or to operate upon.

FREEDOM RELATION Components ► Functions▼	Methods	Structures
Discernment of scope	Situational analysis [D.4, D.1 14; E.9-10]	Resources / potentials [E.11-14(4); cf. H.1-2]
Procedural production of scope	Time blocks / first things fi "inner freedom" [cf. E E.22(1); D.15/16]	Criteria / operative concepts (plan) [E.22-23]
Use of scope	Focus as (conscious) plan [E.25]; goals (A.3/16)	Focus as activities or content [E.25, H.]; A.16(4)

Table 2: Property Matrix of relations of freedom in operative terms

26. RÉSUMÉ: FUNCTIONS (AND FUNCTIONAL CONDITIONS) OF PERSONAL FREEDOM AND FREE WILL

What are the *functions (and functional conditions)* of freedom and free will? The answers are, in part, to be found in this chapter: (1) Freedom and free will are *not arbitrariness*, but *order* life and living together, i.e. social life, as *meaningful*. (2) Freedom (and free will) serve one's self-realization: i.e. freedom enables *personal development,* free will brings it about (together with social conditions); freedom (and free will) is, thus, *a developmental perspective.* (3) Freedom and free will can be *amplified or enhanced*; they can be structured and elaborated upon or detailed, for instance, as capabilities. (4) According to Table 2 (above), freedom is discerned as scope (and as constraint), is produced (as a condition of acting), is used. (5) Freedom and free will *operate on different levels* of thought and action, and *themselves depend* – partially – on the distinction of these levels. (6) The perception of freedom and the use of free will are *based on,* or *regulated by,* an internalization of such norms which imply reciprocity or mutuality, and self-organization. This means: I, as a self-organizing person in support of you, as a self-organizing person, and vice versa, you in support of me; we, respecting each other and enhancing our development(s) as self-organization, mutually. In principle, 'you' should mean everybody in society, and 'society' should become mankind. See E.33.

References: 16.; 47.; 174.; 175.; 176.; 17.; 29. *As contrast and as deepening:* 57. *D.12:* 104.; 145.. *D.24:* 57.; 8.; 146.

Addendum I: Swanton, Christine, "Freedom. A Coherence Theory", Indianapolis, Indiana 1992: Hackett Publishing Co. ['Unfree' is generally defined as an impediment for action, even, for example, in the sense of arguments against murdering someone. The starting points consist of what are termed "endoxa" (standard cases of reference) for freedom / unfreedom. 'Coherence' remains, otherwise, undefined.]

[*Addendum II:* "The neurobiology of free will as outlined in D.0.2 is prototypically highlighted in terms of a *buffer*. The following *dimensions* characterize such a buffer: (1) *consciousness* [C.2.2.1: wakefulness, attention, intention, comparison (incl. execution), together with their *functions* such as amplifying, integrating, adding [C.4(11)]; (2) *memory* [of attention, short-term m., working m., long-term m. selectively]; (3) *contemplation* [no stressors, "unprogrammed time"; possibly regulated by "bio-clocks"]; (4) the *central processor* as circuits (arc of Papez, etc.); (5) the idea of *different hierarchical levels* of control and information-processing; (6) the differentiation of *egocentric vs*. *allocentric* neurons as a substrate of self-determination and autonomy". (My summary)]

E. PERSONALITY AS A SYSTEM: SELF-ORGANIZATION AND SELF-STABILIZATION

0. AN OVERVIEW

I. On the concept of personality

I begin with an analysis of linguistic usage: personality is attributed to a developed human being (1.). The concept of personality is explicated as a self-organizing system with learning history (aspect of content) and with the capability of acting and of planning (aspect of operative capability)(2.). In detail, some aspects are: learning history, reached development, (degree of) independence, consciousness available, and (degree of) coherence (3.; cf. E.20). Functions of the personality system comprise conceptualizing everyday life and course of life, managing them, and orienting oneself in them (4.).

II. The coordination of everyday life and of the course of life within the personality system

The contents of the concept of everyday life and of individual life are determined by means of the dimensions of intimate relations, work relations, and social relations (5.). Moreover, individual life is provisionally characterized in terms of experience, decision-making, action, fulfillment, and meaning (6.). The latter items are exemplified for the relational dimensions just mentioned (7.).

III. Sociological perspective of personality development

Considerations of the social and political contexts of personality development or rather of self-organization follow (8.-10.). This entails social opportunities for the development of personality as well as for their individual use (8.). Institutionally or informally, social structures either support or impede Man. The model of the "critical and responsible citizen" is considered to be valid (9.). Opportunities and deprivations in terms of jobs, profession, education, or socialization are specified (10.).

IV. Personality as a self-organizing system with learning history, capability and identity

Actually achieved development (11.) and the clarification of the self-image (12.) belong to the structure of learning history. As for the model of personality as a self-organizing and self-regulatory system (cf. 20.), cognitive, moral, and social judgement form part of consciousness and of capability (13.). Concept and theory of coherence, e.g. Antonovsky's theory of the "sense of coherence" (14.), and a corresponding perception (15.) and formation of coherence (16.) are considered. The control systems

“self-esteem as a monitor” (17.) and “system identifying triggers” of alarm, resistance and health are described (18.). Ideas of the concept and theory of identity follow (19.). As a preliminary result, the concept of the self-organizing system is differentiated (20.).

V. Self-organization and self-stabilization as optimized procedures

Self-organization and self-stabilization can also be conceived of as techniques for organizing life. (21.). As criteria for a personal life-organizing program of development in the sense of optimized procedures of self-organization, we can name: orientation towards tasks, joy, hope, resistance, social orientation, controllability, truth and objectivity (22.). We determine as operative concepts: life plan, daily routines and focus as a buffer of medium-term length (23.). As a procedure to form a buffer, we refer to Schoeller’s method of “First things first” (24.). The concept of “focus” is introduced as an “optimizing procedure”. A focus consists of a personal project. The focus is problem-oriented: deepened experience of structures, development of fantasy, and development and stabilization of comprehension (incl. “style”, “taste”), also professional development or deepening an (intimate) relationship could be at the center of attention (25.). The idea of the “change of focus” is introduced in order to develop other aspects of the personality (26.). The concept of the basic stabilization of self is procedurally characterized by: lists of positive events for self-programming a positive tonic mood; mental and neural techniques of removing stress; a schema of self-stabilization. Several view points are proposed as immediate aid (27.).

VI. Dissolving disturbances and crisis analysis as self-stabilization

Several additional questions and criteria for characterizing a crisis in relationship, interaction or work, and for self-stabilizing therein, are discussed in the form of a short guide or check-list, including a procedural schema according to Brammer (28.). The check-list is deepened by considering contexts and their possible disturbances as well as unbound, i.e. decentralized and decontextualized schemata (29.). Inter alia, social compatibility, constructiveness and objectivity are named as criteria for counseling (30.).

VII. On goals of self-organization

The concept of “independence” is explicated and specified as a central goal of the self-organized development of personality (31.). Finally, “zest for life” (32.) and “peace of mind” (33.) are specified as further goals of self-organization.

I. ON THE CONCEPT OF PERSONALITY

1. A PERSONALITY IS A DEVELOPED HUMAN BEING

Normally, one speaks of 'personality' with regard to human beings only. This term might still be meaningful with regards to primates (e.g., the orangutan, and especially the chimpanzee), but might then often point to a relationship between observer (ethologist) and animal which has developed over time.

There is not much sense in speaking of the 'personality' of a new born baby, but of a 'person in the sense of an organism' and of a 'legal person' (protected by law). We speak of a child in terms of 'a gradually developing personality', i.e., a personality is a human being developed by education, socialization, self-instruction, experience, etc.

2. A PERSONALITY HAS LEARNING HISTORY AND PLANNING CAPACITY

We speak of 'personality' with regard to certain experiences, accomplishments, tasks, decisions, as well as to social behavior.

Personality is a system with a past ("learning history") and with the capability of acting in tasks with regard to the future ("capability of planning and projecting"). See E.IV.

3. PERSONALITY AS A SYSTEM

We conceptualize personality as a system, not as being unstructured. Aspects of this system are:

a) Degree of self-organizability and learning capability. See A.III, E.V-VII.

b) Degree of factually reached development in certain dimensions (knowledge, experience, skills). See e.g. D.11-16.

c) Degree of independence (all components which are relevant for action or decision are more or less available, applicable, and conscious). See E.31; D., especially D.22.

d) Degree of individualization, consciousness, and identity formation (self-image, style, taste; attention, vigilance; moral and cognitive judgement). Cf. E.12; E.7; E.17-19; E.13.

e) Coherence (biography, locus of control in acting: autodetermination vs. heterodetermination, also "fate"; a "break-up" in biography). Cf. E.14-16; 12(1).

4. SYSTEM FUNCTIONS: CONCEPTUALIZING AND MANAGING EVERYDAY LIFE AND COURSE OF LIFE

Considering the system of a (developed) personality, we determine the following functions: orientation in everyday life and in the course of life; conceptualizing (planning) and managing everyday life and the personal course of life. The latter entails, for instance, such components as a life plan and life decisions. See A.10-11, 16; E.23, 25.

II. COORDINATION OF LIFE AND EVERYDAY LIFE WITHIN THE PERSONALITY SYSTEM

5. DIMENSIONS IN LIFE AND EVERYDAY LIFE: INTIMATE, WORK AND SOCIAL RELATIONS

Everyday life consists primarily of *routines* which structure one's day (the course of the day, organization of needs and tasks). *Life* consists of the chain of such days and in *superordinated long-term goals* (cf. "life cycle" in anthropology, "grand design" according to Schank/Abelson 1977; cf. E.23). The need to cope with crises forms a central component of these structures (cf. E.27/28).

Prototypically functional, temporal and social dimensions in life and everyday life are:

a) Intimate behavior, partnership, family.

b) Work, working colleagues.

c) Organization of leisure time, formation of interests, resting.

d) Eating, living (shelter), possibly possession including property and other basic needs.

e) Social behavior; the domain of the "socially more distant or remote" (vs. "close").

In terms of an alternative classification, we are dealing with:

a) Intimate relations.

b) Work (place) relations.

c) Social relations in general: acquaintances, other people in everyday life; also mediated: "remote" relations ("world"; "third world", abroad).

A developed personality holds schemata of orientation in situations which correspond to the dimension considered, as well as schemata of managing such situations (cf. A.III).

6. A PRELIMINARY APPROACH TO LIFE AND EVERYDAY LIFE IN TERMS OF EXPERIENCE, DECISION, ACTION, FULFILLMENT AND SIGNIFICANCE

0. A preliminary approach: In this exposition, I focus on the *(existential) aspects of perception and of acting*: experience, decision, action, fulfillment, and significance. These aspects can provide a preliminary approach to life and everyday life, stimulating their structural analysis. With these aspects in mind, we will later turn to the domains of relations according to E.5(a-e).

The approach will be systematically reshaped in terms of self-organization and self-stabilization in E.IV [Learning history, capability, identity], E.V [Self-organization as an optimized procedure] as well as H [Problem development]. See A.III [Cognitive schemata, planning, problem-solving].

1. Experience: We include here situations or episodes which we experience *passively* (as an *"incident which occurs to us"*, in accord with the archaic German word *'Widerfahrnis'* according to Kamlah 1973) or *actively* (as an *initiative or action by us).* We have to manage such situations or rather we have to cope with them. Experience consists in events and their contexts: in achievement and need, in sensory and affective perception ([tasteful] enjoyment, pleasure), in experiencing dangers, alarm and conflict, in graphic perception, communication and the success or failure of doing or intending. Experience is abstracted or generalized; it leads us to constants, to cause-and-effect relations, to cautiousness or alarm. It conditions behavior and form everyday life knowledge, especially interpretation knowledge.

2. Decision: We include the task of deliberating alternatives of action as well as the task of decision-making itself, and criteria, and factual knowledge for evaluating anticipated consequences. Decision-making leads to action and, thus, to the dissolution of indecision.

3. Acting and action: Action includes goals, steps (of action), routines (habits of doing, customs *[scripts]*), plans (cf. Schank & Abelson 1977). Actions are schematized (routine or script) or must be planned: beginning with the goal and the outset (entry conditions). Goals, situational peculiarities, and communicative behavior towards other human beings have to be coordinated in the corresponding relational domain, if necessary. See A.22, A.15f.

4. Fulfillment: Fulfillment is explicated in terms of the following features:

a) Saturation: in the positive sense, a resonance based upon the optimized volume of experience or perception (domains: intimacy, family, profes-

sion, “life” incl. life decisions, interests or hobbies, for example, in one’s leisure time); in the negative sense, frustrations.

b) Congruence of goal and result: in the positive case, success; in the negative case, failure; primarily relating to achievement.

c) Life design: positively (in contrast to (a) the *structural image*), life goals; in the negative case: a (feeling of) structural deficiency.

d) Fateful life events (incidents which occur to someone; the attribution of “fortune” and “misfortune”): e.g., neediness, danger to life or rescue.

The explication of the concept of fulfillment is certainly preliminary, but supposedly most trials of self-stabilization start here.

5. Significance: Significance is tentatively distinguished from fulfillment. Life processes or fateful events are *interpreted.* We then say such processes or events make sense or have significance for us. Alternatively: they are meaningless (absurd). This can even be valid for the interpretations themselves.

a) Heuristic rule: a theorem abstracted from cultural anthropology reads: “Man creates sense (meaning)”; or: *Every person has to search and define significance (i.e. meaning) of his (or her) life on his (or her) own in our non-traditional society.* At least this represents a starting point for self-organization and self-stabilization. Dependency upon poorly understood powers or social partners can be criticized, fought against, and relativized. This is valid for the “interpretations of significance” *offered*, too.

b) “Individual and society”: as in (a), here we try to understand our life *as our own life;* lived by ourselves, shaped centrally by ourselves, being a part of our personality (wanted?, accepted?, endured?, interpreted as fight?). See E.19 (e.g., Thesis 5 [Conscious development of identity], E.31 [Autonomy] and D.14, D.20, D.21 [Group pressure & self-consciousness]; B.1 [Social association]; G.2 [Life conditions]; E.13(2/3) [Moral & social judgement]; B.12A [Individualization].

c) Ideological-opinionated constructs (of reality): e.g., the culture-specific clichés of “the people (nation) as a community of destiny”; “state and state servants”, “damnation (doom) and redemption”, and the like. Considering the development of an independent personality and of free will, the carefully thought out *resistance* to such constructs which are mostly *depersonalizing (detached from the individual)* is proposed and demanded, this in contrast to internalization or conformity. See E.9(2), A.19; and cf. Albert 1968.

d) The concept and the theory of life coherence provide possibly new points of view to *establish* or to *discover significance* in one’s own life (cf. E.14-16; E.V; H, e.g. H.4). Processes of one’s life which belong together

can then be interpreted heuristically as learning, as development, as liberation, or as completion.

7. A PRELIMINARY LOOK AT PROBLEMS OF INTIMATE BEHAVIOR, WORK, LEISURE, EATING, LIVING, BASIC SOCIAL NEEDS

The (existential) aspects of perception and acting are illustrated in terms of the dimensions of relations (E.5(a-e)). Thus we try to illustrate the structures of life and everyday life and their problems.

1. Intimate behavior: As an example, experience, decision and fulfillment are detailed for the dimension of intimate behavior and partnership.

Episodes of experience, also of conflicts (actively produced or passively experienced), may lead to questions of decision-making and to questions of significance or fulfillment. This might concern: sexual satisfaction or attraction, increase of energy or deficiency of energy, continuance of the relationship or commencement of a new relationship, familiarity and commonality (sharedness) as convergent and energizing consciousness, as a need, as habituation, as sentimentality or as idleness, the question of economics (costs of divorce, for example), questions of mutuality, of comprehension (vs. control), and of communication with each other. The question of the capability of decision-making may arise as how to dynamize a partnership, or, rather, intimate life. Two persons are two wills and two independent personalities, in principle. See E.28; I, especially I.6.

2. Working relationships: Within the dimension of *work, and work colleagues* we may be dealing with the experience of unemployment, of the restitution of capability of acting with problems of limitation in planning in terms of searching for a job, or perhaps of retraining. Moreover, we might deal with questions of job satisfaction, of the significance of a certain type of work, and of colleagues in terms of cooperation, in the good or bad sense (staying in a job because of one's colleagues, or leaving it because of them). We might, furthermore, deal with questions of professional qualification, i.e. of formal training and of further qualifications, of one's consciousness of achievement, and of one's need for achievement in the sense of the question: "Does this work satisfy me?" vs. "Am I up to what I am supposed to do in my work?".

3. Organization of leisure time: Functional postulates for leisure behavior include: developing (thematic) interests, generating new energy, at home, perhaps within the family, communicating with friends or acquaintances, switching from labor to other activities (diversion), resting and integrating

work and life into a subjectively meaningful concept of life. This might lead to the question of one's *interests,* in a naive everyday meaning, for instance, of "hobbies" which relate to significance and fulfillment (cf. E.22(2); E.25). Is energy newly generated or newly built up, or does leisure behavior lead to further stress and to further exhaustion? The organization of leisure and work complement each other. Other conceptualizations, apart from "complement" are, of course, possible. Is the relationship between these two domains conscious, understood or a cause for blockade, incapacity of acting, or increase in stress? Functions, functional prerequisites, and the consequences of functions for action have to be taken into account. Some existential problems might be solvable if episodes of leisure time do not remain isolated but build upon each other (in the extreme case, "from weekend to weekend") as action patterns for leisure time.

4. Eating, drinking, and living: The dimension of eating, drinking, and living, perhaps of possession (incl. property), is tied to style, taste, and social basic needs (e.g., eating and living: as taste, style, or as an unavoidable evil, as a social event of sharing and of commonality or not). Material needs such as life goals and as a form of experiencing life and of experiencing it as meaningful, could constitute one aspect of this dimension. Its inclusion in social sharing, joy, fantasy and expressive behavior constitutes another aspect. In terms of *style and taste,* eating and living can mean:

a) Contextualization in contrast to the purely somatic satisfaction of need. This means that needs can be seen in connection with one's life partner, with one's family and with friends, with daily routine, rest, recovery and the individual consciousness of life.

b) Single episodes become a habit (custom): Actions are repeated and become a rule. They remain in one's consciousness and are evaluated and seen as being positive. The feeling of joy and satisfaction accompanies them. Eating, drinking, and living do not flatten out in so far as eating and drinking are continuously repeated and one's residence (apartment, for example) remains identical. These needs conserve their intensity and may become a tasteful enjoyment. The condition for that is the awareness that one is opening one's sense organs and is perceiving intensively with the senses.

c) Activities in this domain of eating and living *are not isolated, but form a cluster:* expressiveness, the composition of components; social arrangements, e.g. in terms of thematically specified events, of dialog, of participation and "atmosphere"; somatic needs, e.g. to satisfy hunger, to be left by oneself, to rest, to enjoy taste consciously, to satisfy the need for social energy or even synergy. The selective connection between these activities determines style.

5. Social behavior: Considering social behavior, we deal with minimal standards of solidarity as a political attitude, of ethics, of justice or fairness; of the consciousness of "identity and locality", and of a conscious and objective attitude towards the "strange" and the "familiar". Friendliness, objectivity, and unobtrusive interest are beneficial for others and for oneself. Help and support are to be considered in this context. Considering political consciousness in life and everyday life, we emphasize participation, the right of information and decision, and the capability of decision-making in all questions which are pertinent to one. Political opinion formation presupposes a reasonable uptake of information and a reasonable degree of information-processing.

III. SOCIOLOGICAL PERSPECTIVE OF PERSONALITY DEVELOPMENT

8. FORMATION OF THE PERSONALITY SYSTEM: A SOCIOLOGICAL PERSPECTIVE

At this point, we consider the social opportunities which a society offers or can offer[31] for personality development in terms of individual use. The use of resources or opportunities can be planned more actively and consciously, or can be experienced more passively and indirectly, by means of comparison with other societies, for example. Opportunities and their use concern:

a) Social structure in the stricter sense, e.g., work and profession, solidarity (incl. formal or legal and informal help and support), fundamental rights, the satisfaction of basic needs, the health care system, the system of education, and knowledge of orientation or information.

b) Political structure, e.g. participation in decision-making, rights in political co-determination, in terms of voting, of political discussion and consultation, or negatively, deprivation of them as a structural condition.

[31] As a frame, I refer the reader to economist Amartya Sen, "Development as Freedom" (Oxford 1999: Oxford University Press). A reasonable education and health care system and the absence of famines are central to a theory of economy and development. The same holds true for personal development. His ideas elaborating on the concept of *capability* and its relation to freedom, justice, poverty, personal and social development are especially relevant.

9. SOCIAL STRUCTURES SUPPORT OR IMPEDE PERSONALITY DEVELOPMENT

1. Social structures support or impede: In detail and as an example, the following social structures support or impede the development of the personality system, especially with regards to the goal of "autonomy" or, rather, "self-determination" (cf. E.31):

(1) Public institutions of support: The direct level of community (inter alia, citizens' action groups or the like) is especially important. The corresponding institutions depend upon direct or indirect (parliamentary) democracy, general, equal, and secret suffrage. The freedom of association might be a major organizational factor. These public institutions and their features include: general, and vocational, primary, secondary, and tertiary education which is free of fees; obligation to account or report, i.e. obligation to justify and to give arguments for decisions; and social solidarity formalized in terms of social rights for all.

Individual consequences could consist of standing up consciously for more civil rights and for the right to "a say in things" and to co-determination. This means: social structure can stimulate or discourage such legal consciousness and the corresponding behavioral capacity. An intact legal system is basic for this behavioral capacity.

(2) Informal "social environment": This includes informal social solidarity as a social behavioral capacity and as routines of social acting, or, rather, the informal and individualized social consciousness of action partners in contact in everyday life. Consequences could consist of encouraging or discouraging civic spirit and resistance to group pressure.

2. Possible program of development: Ideas for public programs of development (i.e., for curricular development in schools) and ideas for private development can follow. The model would be the "critical and responsible citizen" who determines himself and remains conscious of himself and of the social, political and/or administrative context (cf. D.23/24 with reference to a philosophy of freedom and of free will or of critical reason, i.e., in the sense of "critical rationalism" in the systematized version by Hans Albert). What serves this model would be publicly supported. What runs counter to it would have to be corrected. This is valid for oneself, correspondingly.

10. OPPORTUNITIES AND DEPRIVATIONS: SOCIALIZATION AND ECONOMIC EXISTENCE

Special basic *social opportunities* are contrasted with *social deprivations* in terms of a descriptive dimensional schema. These opportunities or deprivations co-determine the possibilities of the development of the personality system *in the individual case:*

1. Agencies of learning and of socialization: Among these institutionalized ("schools") or singular (e.g. "gifted teacher", "contact by chance") agencies are included:

(1) School, vocational training, university: curriculum, support of interests, qualification; supportive vs. impeding in the development of capabilities, their range and fantasy.

(2) Family: supporting vs. impeding in interests and in mental development, e.g., in relation to one's own sphere of body feeling, *ability to concentrate,* intellectual stimuli.

(3) Mass media: objective or factual, informing, problematizing, interest-stimulating vs. inciting, indoctrinating, etc.

(4) Books (libraries, book stores): These are points of reference of interest formation, of orientation, or of furthering fantasy.

2. Social economic opportunities vs. deprivations: They form the basis for economic existence, e.g.:

(1) Vocational imaginations: This includes interests, role preferences, ideas about optimizing health and social atmosphere, skills, mental capabilities, and other requirements based on qualifications obtained, beliefs about achievements and goals. These are traits of personality and identity development. They could, for example, lie at the basis of professional choice, professional training, and professional practice. "Job" and "profession" are here preliminarily separated.

(2) Jobs: Here we are interested in the characteristics of work and qualifications, i.e., in the aspect of permanence, of fair material pay and the possibility of self-realization in work. These characteristics form the basis for one's relatively independent existence and for the formation of long-term goals. A field of attitudes and capabilities of acting can be built up: professional and personal qualifications, one's need for achievement, consciousness formation, need satisfaction, or personal fulfillment.

3. Summary: With regard to these socialization and socioeconomic *opportunities,* we are dealing with stimuli, with support, and with the build-up of a temporal scope of development. Presumably, we develop mental schemata of learning and of *long-term expectancy as well as a behavioral style* which is *self-determined, initiative, and achievement-oriented.* With regard

to *deprivations,* we are dealing with impediments, with monotony, with the collapse of motivation and energy level, with discouragement, or with negative censorship and indoctrination: behavioral styles are developed which are more authority-oriented, obedience-oriented and valuation-oriented.

Becoming aware of possible deprivations which occur to oneself or to others can lead to reflection and to a self-organizing initiative.

IV. PERSONALITY AS A SELF-ORGANIZING SYSTEM WITH LEARNING HISTORY, CAPABILITY, AND IDENTITY

11. ASPECTS OF THE PERSONALITY SYSTEM: DEGREE OF DEVELOPMENT ACTUALLY ATTAINED

I have included the degree of capability for *self-organization and learning* among the aspects of a personality system (E.3). At least, *organizing the satisfaction of basic needs* (in Galtung's sense), and daily life routines have to be learned. See E.23, 25. Development of personality is life-long, and is directed towards the future. We are challenged by life-long learning: from school to profession to new tasks. Some *general points of view* are valid:

1. The degree of personality development actually attained (E.3b) is *bound to the point of time* autobiographically considered.
2. Childhood, puberty, and adult age are *different phases* in terms of physical maturation, and represent different stages of psychosomatic, cognitive, and moral or social development.
3. The body-feeling sphere, the sphere of privacy, of possession, of action, and of decision-making are *central* aspects in personality development. See E.18.
4. *Regression* results from immature relations and social contexts. Frequently, the social schema (dependently employed) is mistaken for the developmental schema (childhood, youth). These are social and personality disturbances which have to be removed.
5. Personality development actually *attained* may consist in the consolidation of knowledge and skills, in the formation of interests which are permanent or can be reactivated, in personal conscious achievements and in the ability to orient oneself towards the future.
6. Dealing with *personal fate* belongs to personality development (fate as self-determined vs. heterodetermined vs. chance-determined, the latter two types in the sense of events which have occurred to us and which we experience passively). See E.14(3(4/5)).

7. Personality development is *not* identical with "education" in the sense of *school curriculum*.

Here we are more interested in the capability of practical *transformation* in daily life and in life planning, in terms of the dimensions of educational theory in A.19(2).

THEORY OF EDUCATION	PRACTICAL TRANSFORMATION
Functional knowledge ("world view, image of society, of Man")	Continued interest in the subject matter; contribution to opinion & interest formation; consciousness of health (problems)
Models of decision-making and behavior	Social action, problem-solving, conflict behavior (see: E.13(1-3))
Fantasy	Creative potential in everyday life, i.e., in leisure time; formation of interests
Style, taste	Personal coherence (E.14-16) and preference
Structural capabilities	General capabilities of thinking and of abstract reasoning, of languages, of verbal expression

Table 1: "Educational structures" and their practical transformation

8. *Explication*: Personality development actually attained is made up of knowledge ("accomplishments", "(one's own) experiences") and skills (incl. "cultural techniques", reading, writing, calculating, and the like in our society, and professional skills). The dimensional analyses in E.5-7 as well as the schema-theoretical considerations in A.10-11 can serve in the ordering of knowledge and skills in terms of content. The capability of cognitive, moral, and social judgement is basic when considering the personality development actually attained. See E.13.

9. *Achievements* in material terms (possession), in cognitive-technical terms (work products, and mental products, too) and in terms of qualifications (examinations, certificates) *documenting* skills and a professional formation are also to be included when considering the development of personality attained at a specific point in time. Consciousness of these achievements and memory thereof are possible positive or negative *points of reconsideration* in future planning, decision-making, and acting.

12. CLARIFICATION OF THE SELF-IMAGE: AUTOBIOGRAPHY / LIFE DECISIONS / SUBSYSTEMS

As further aspects of the personality system, we refer to (E.3): *Individualization, consciousness and coherence (attained)*. At their center lies the clarification of the self-image as a macro-schema which one attributes to oneself. Hereto pertain:

1. The autobiography: The ability to describe one's own curriculum vitae, e.g. in terms of the relational dimensions of life and daily life (E.5a-e) or in terms of the alternative classification as intimate, working and social relations. An *outline of normal every day* (average or prototype) would be included.

2. Life decisions: Sketching the life decisions which co-determine the course of life in the future or which have co-determined it in the past would be important. Again, a specification according to E.5a-e is recommended.

3. Self-image: The self-image has the following subsystems:

(1) The autobiographical *image of facts*, i.e. what one thinks one is.

(2) One's *image of wishes*, i.e. how one would like to be. Normative features can play a role.

(3) One's *negative image* which one seeks to avoid, i.e., how one does not like to be or what one does not like about oneself. Again, normative features might play a role.

4. Activating functions: The subsystems of the self-image can serve as a trigger for:

(1) Alarm and vigilance: attention as part of consciousness.

(2) Self-reflection as a function of consciousness and as a component of planning. See E.17/18(2) and E.25.

13. COGNITIVE, MORAL AND SOCIAL JUDGEMENT AS A PART OF CONSCIOUSNESS AND CAPABILITY

Consciousness and personality development attained include the capabilities for cognitive, moral and social judgement. The reader is referred to J. Piaget's psychology of development.

1. The capability of cognitive judgement: Attention is focused here on *dealing with reality.* See Naess 1966; von Wright 1971; Albert 1968; Stegmüller 1979.

(1) *Dealing with facts,* establishing them, verifying or falsifying them, in contrast to propaganda or to partiality, i.e. to interest-dependent distortion

or incompleteness, and to lies. Dealing with truth and the procedural efforts to establish it.

(2) *Dealing with causes and effects* (consequences): explanations and forecasts; also: (historical) reconstructions of focal events and/or interconnected events, causes and effects. See Stegmüller 1969 as the standard of reference on causality.

(3) The *capability of precise description,* i.e., of a factual or material process, in contrast to imprecision.

(4) *Objectivity* instead of emotion, instead of expressing opinion, and instead of manipulating opinion. This includes the shear quotation of the opinion of third persons. The effort to distinguish between objective, factual judgements, and value judgements.

(5) *Dealing with functions, goal-orientation and task-orientation* (problem-solving behavior); avoiding dysfunctional behaviors ("habit").

(6) *Dealing with inferences* and with conclusions (support of conclusions vs. arbitrariness or mere speculation).

(7) *Dealing with reality* includes the *capability to conceive particular details in context.* This includes, especially, the capability *to conceive units and their interrelationships as a system.*

(8) The *capability to elaborate one's plans or outlines of action.* See item (5) above. See A.16.

(9) The *capability of criticism,* i.e., to uncover ideological, dogmatic and interest-dependent preconditions. The capability to seek for alternatives (ideas, projects, problem solutions).

2.The capability of moral judgement: Dealing with other persons' rights is at the center of attention. See Bunge 1989 (and F.7). See D [Freedom], especially D.18.

(1) *Dealing with the interests of second, third, or fourth persons* in social acting, i.e., to one's own advantage: the capability to uncover disadvantages for other persons in one's actions and to notice it in one's thought; this includes capabilities such as forbearing certain actions.

(2) *Respecting the ethical criteria of "ought" and reciprocity, justice and legality* in one's moral judgement and acting. See F [Conscience], e.g. F.1.

3. The capability of social judgement: This is composed of cognitive and moral judgement. *Social association with other people* is at the center of attention; cf. B, especially B.6-8/12E.

(1) The *capability to choose one's (life) partner, one's friends and,* if need be, *one's leisure time group.*

(2) If necessary, the *determination of a group of reference or support* ('system of support' according to Antonovsky; cf. E.14(4)).

(3) The *capability of convergent,* problem-oriented or task-oriented *thinking.*

(4) The *capability of role reflection* within the group, also of resistance to group pressure. See D.20, B.8(2).

(5) The *capability to articulate* local and social *identity and to actualize communal spirit* (or to articulate it *in disagreement differentially*).

(6) The *capability to form "alliances".*

(7) The *capability to mediate between others (understanding and comprehension as a social achievement).*

(8) The *capability of communicating.*

(9) The *capability of social participation, of social attention* and *of social thought.* This includes functional social control in contrast to a dysfunctional anti-liberal one: e.g. in the sense of citizens' action, of future-oriented responsible consciousness. This, moreover, includes a reasonable disposition to help.

(10) The *capability to develop a social attitude towards the destiny of other people* (cf. Heider 1958; A.19): to distinguish self-determination from heterodetermination or chance-determination, to conceive destiny in its aspect of involuntary occurrence as a social right to compensation: health insurance, unemployment insurance, pensions, participation rights in the working place and a consistent fight against drugs are touchstones. These rights are not to be left to be taken care of by private, ideologically, or religiously bound intiatives. Nevertheless, compassion and sympathy (in the sense of Item (9)) continue to be social capabilities.

(11) Concerning the extension of Item (9) and (10), the *social capability of organizing resistance* in the presence of injustice, i.e., unjust normative pressure. See D.19-21.

14. CONCEPT AND THEORY OF COHERENCE

1. Coherence as an aspect of the personality system: Coherence is an aspect of the self-organizing personality system: events in life and intentions are *conceptually integrated.* We speak of the coherence of a personality, of the coherence of his or her wanting and acting, of the coherence of his or her self-organization.

Explication: The special achievement of a self-organizing system of personality is the capability to conceive of oneself as being relatively "coherent" in one's life and in one's development, and to process and to integrate events in one's life, more or less well (cf. E.15). A further capability is to be able to "order", plan, and to act "coherently" towards the future

in terms of one's developmental direction and life goals (cf. E.16). See E.V and H.

2. "Coherence" in De Beaugrande's text-analytical theory of comprehension: Coherence deals with *procedures* for activating knowledge in conceptual interrelationships. These include: logic, set inclusion, the establishment of causality and of the organization of events, situations, actions and objects, as well as the establishment of the *continuity* of human experience. One could add: establishing assignments of objects, events, units, and relations to goals and functions, to a *system*. These procedures are the basis for one's own "coherent" doing, and for the capability to "comprehend" or to interpret other peoples' situations, actions and texts.– See H.4 [Problem coherence]; A.22C, B.12; C.4E, D.24.

3. On the concept of a coherent personality: Different *focal* points of view of coherence (i.e., of conceptual integration) are proposed as examples. See programmatically E.25/26, as well.

(1) (Degree of) the well-integratedness (or harmony) of a personality system, possibly also of the corresponding conscious self-image. The guiding idea of well-integratedness is, for example, activated in terms of role, work (profession), experience of conflict, and life decision. Contradictions are reduced; the personality may appear as being "well-rounded". We emphasize the *integration* of the personality. See E.33.

(2) (Degree of) differentiation of a personality system according to specified dimensions of content. We emphasize differential development and the possible *versatility* of the personality.

(3) (Degree of) saturation of a personality system. We emphasize the personality aspect of sensuality, of zest for experience, and of *fulfillment:* e.g., "unlived, unfulfilled life (frustration)" vs. "fulfilled life"; cf. the definition of (sexual) fulfillment in I.5.5. Something similar is valid for achievement, experience, composition.

(4) The attribution of control of action according to attribution theory: Self-determination (experienced and conceptualized as "inalienable" by means of one's decision-making and consciousness; the belief that one has influence over one's life) *vs. heterodetermination or chance-determination* (e.g., misfortune, disease, distress, death, accident; fortune, support, help from others, rescue). We emphasize the personality's own *capability to act,* and his or her own consciousness of action.

(5) Principles of structuring, consistency and balance: This includes a life plan with superordinated long-term goals (e.g. family, possession, security; formation of mental interests, education, capability); the congruence of goal, doing and result. Procedurally, we focus on constructive, crisis-oriented or *progressively developed* acting on of one's own. To facilitate

acting or to restore ability of acting is self-stabilizing or rather balance-producing. The criterion of balance could include the degree of crisis-proof experience, unshakeability, and harmonizing. The principles of structuring include the orientation of action or direction of development, centrality of events and a desire to go on. We emphasize the aspects of *generating relations*, of *system formation* and of *system stabilization* with regard to the personality by means of *procedurally* defined concepts. See E.21-33.

(6) Personal style, personal taste, social capabilities, and personal consciousness are open fields of coherence research. It is assumed that the special aspect of "personality individualization" can thus be captured.

4. Aaron Antonovsky's theory of coherence ("Unraveling the mystery of health. How people manage stress and stay well", 1987:19): Antonovsky starts from a *'sense of coherence'* which is basic to physical and mental health: "The sense of coherence is a global orientation that expresses the extent to which one has a pervasive, enduring though dynamic feeling of confidence that (1) the stimuli deriving from one's internal and external environments in the course of living are structured, predictable, and explicable; (2) the resources are available to one to meet the demands posed by these stimuli; and (3) these demands are challenges, worthy of investment and engagement." Antonovsky defines the sense of coherence as confidence. Incidents a person incurs and chances of acting are considered as being structured stimuli or challenges. Antonovsky highlights three components of this sense of coherence: (1) *meaningfulness;* (2) *comprehensibility;* (3) *manageability* and controllability (cf. Antonovsky 1987:48 where he analyzes and compares five models). See D.10 [To-feel-free]. Antonovsky's concept of the "sense of coherence" also includes a mobilization and evaluation of a possible *system of support,* i.e. of the social human network, if necessary, together with a mentor or counselor. Thus, one tries to achieve the support of one's goals and projects, and the productive criticism of them.

15. ADDENDUM I: COHERENCE IN LIFE HISTORY AS PROCESSING AND CONCEPTUAL INTEGRATION

One's life and one's life history can be *conceived and recognized* as coherent. The concepts and a theory for the same have been presented in E.14(3/4). Personal events can even appear as being coherent *in retrospect*. We say these events would acquire an interpretation in the context of other events and/or they would make sense in one's personal life. The self-organizing schemata for that are, then, schemata for self-interpretation and for ordering the corresponding events of life. *Incidents which occur to*

somebody are not self-determined. They can disturb, or even destroy, perceived coherence. In such a case we try to restructure ourselves. I characterize the perception of coherence in retrospect as being a *capability* of the personality system *to process experiences in life, knowledge, and destiny, and to integrate them conceptually.* In retrospect, coherence is a memory function to complete, to recognize, to connect, to reinterpret and to integrate. Non-traumatic *experiences and their schemata are normally leveled* and become knowledge of memory, or they are even forgotten in terms of content (cf. Aebli 1981/II: 195ff.). *What counts are events which have continuing consequences.* These experiences in life, and their characteristics, can form *focal points of reference* within a dynamic memory.

16. ADDENDUM II: STRIVING FOR COHERENCE IS SUBJECTIVE, RELATIVE IN STRUCTURE, AND DEPENDENT ON CONSCIOUSNESS

1. Coherence as a self-determined instruction to act: I use the criterion (or rather criteria) of coherence for *projecting,* planning, and acting towards the present and future. E.5 and E.6/7 serve as a list for *generating structure:* some (subjectively) central characteristics are emphasized over others and are interconnected with each other, and become a basis for further thought and action. *These characteristics are defined as coherent* – per consciousness and per self-organization. This theoretical *concept of coherence is subjective, dependent upon consciousness and relative in structure.* The same holds true for the resulting construct.
2. The intersubjective and subjective aspects of the construct of coherence: The construct shows *intersubjective* dimensions, the content of which varies as style, taste, and life decisions in *subjective* terms. Style, taste, and life decisions can thus be *compared* intersubjectively. The subjective construct of coherence can be developed and intensified further in life. Despite its subjective aspect, it appears to be compatible with causal analysis (person *x* acts in such a way again and again since he is motivated by the coherence concept *y*). Procedures which produce coherence in this sense are exemplified in E.22 [Criteria], E.23 [Concepts: life plan, daily plan], E.25 [Focus], E.27 / 28 [Self-stabilization].

17. SELF-ESTEEM AS A MONITOR OR PART OF THE SYSTEM OF CONTROL: REGISTRATOR, COMPARATOR, SYNCHRONISATOR

1. Social reference of self-esteem: Self-esteem or self-respect has a social reference: the ego in actual reference to other persons, or to his or her (incl. imagined) social environment. Self-esteem can be regarded as being a monitor in the context of personal decisions, following K.M. Colby's theory of personality (in: R.P. Abelson et al [Eds.] 1968).:

a) In the domain of intimate, social and working behavior (incl. need for achievement).

b) In the domain of cognitive, moral, and social judgement.

c) In the domain of opportunities, and deprivations.

d) In the domain of conflict, group pressure, and resistance.

e) In the domain of communication, and expressive behavior.

2. Activating self-esteem: Self-esteem can be activated under the following conditions:

a) When dealing with a self-initiated act towards other persons if this act should violate one's own standards.

b) When dealing with (even repeated) incidents which occur to the ego, i.e. (hurting) actions of other persons "against oneself" so that these actions may elicit one's own reaction to them.

3. Self-esteem as a monitor: The monitor "self-esteem" carries out an actual self-comparison: an evaluation schema 'adequate acting of one's own' and 'adequate reaction of one's own' is called up. By means of this schema, a social interactive situation is compared with an ideal self-image or rather with a set of standard criteria. Consonance or dissonance triggers approval or crisis reaction and is accordingly translated into behavior or action.

4. Control of affect: Anxiety, fear, feeling of persecution, wrath or aggression, shame, shyness and awkwardness, guilt, friendliness, joy, curiosity, and a feeling of achievement are monitored here and can even be controlled after some training (e.g. *"reaction in proportion"*). Objectivity and rationality form a basis for this.

5. Note ("not at another person's expense"): One should avoid the comparison of oneself with other persons in case of intending to devaluate or run down these other persons. One should, instead, compare criteria, dimensions of meaning, consequences, achievements, or the like. If one is not satisfied with oneself, one then should decide to change correspondingly and act differently. This might include hypersensitivity, for example, to criticism, or dependency upon the opinion of others. In case of hypersensi-

tivity, a program of self-modification can be worked out, as a focus (E.25; cf. E.13).

6. Self-esteem in terms of system theory: Self-esteem forms part of the control system of the personality system. Self-esteem is system-analytically a registrator, a comparator, and perhaps a synchronizer for the formation of reaction – taken altogether, the functions of a monitor. *Self-esteem refers to the survival of one's own identity.* See E.19; D.21 [Self-consciousness]; F.6 [Conscience]; C.4B. If self-esteem is not activated under the conditions of social comparison or social stress, then the corresponding monitor can become a developer of one's own identity or personality. I.e., the monitor forms a *metalevel* on which *self-development* or focal planning and/or *self-stabilization* are attended in cognitive terms (cf. E.25, E.27/28). This corresponds to F.6.4, *'On cognitive functions (of the limbic system)'.*

18. SYSTEM OF CONTROL: TRIGGERING ALARM, RESISTANCE AND ILLNESS BY MEANS OF SYSTEM IDENTIFIERS

0. Systems of control of the personality: The subsystem of control of the personality system includes – beside the monitor 'self-esteem' (E.17) – further components which trigger *alarm* or rather *vigilance,* or *resistance,* and which subserve functionally physical and conceptual self-preservation. Resistance in social terms is acquired to a very large degree, and resistance in physical terms is partially acquired (B-cells), i.e., as central properties of the system of control, "health" and "resistance" are recognized. We come up with the following points of view in system-theoretic terms:

1. System identifiers: A *system shows constant identifiers over time* (cf. Hummell & Opp 1971). These determine the *aspect of continuity* of the system. On the one hand, I hypothesize factors of the immune system, on the other, self-image, autobiographical memory and factors of ego-formation (formation of coherence, especially one's own sphere of body feeling, conscious sexuality, one's own sphere of decision-making and of action, social space, perhaps a conscious direction of development of one's own) as central system identifiers of the personality system. The suppression of system identifiers of the personality system leads to a discontinued personality development, perhaps to an illness like schizophrenia.

2. Triggering the alarm: The *alarm system* of the personality reacts to the violation of the factors named in Point 1 and establishes the following features in consciousness:

(1) Compatibility with one's own and with the other person's health, and with one's own and with the other person's sphere of body feeling (interaction, communication, living together, making love).

(2) Compatibility with one's own and with the other person's sphere of personality in territorial terms (decision-making, acting, function, possession).

(3) Social compatibility with one's own and with the other person's behavior.

(4) Degree of rationality and objectivity of one's own and the other person's behavior when solving tasks or problems.

The monitor 'self-esteem' can be regarded as being part of this vigilance system.

3. Immune system, health: Ignoring physical signals of alarm and suppressing or violating resistance in terms of health lead to symptoms of illness. Lacking rest (stress, deficient sleep), faulty nutrition, or lacking consciousness during the day may be the cause. In psychosomatic terms, injustice and negative affects like hate can harm one's health (cf. E.19 (Thesis1)).

4. Resistance: The formation of resistance to *group pressure* in cases of injustice, antisolidarity, antisocial behavior, i.e., mobbing, is anchored externally in fundamental rights, and internally in consciousness of justice and equality under the law. See D.20/21; F.1(3), F.2, F.5.2.

Resistance is learned to a large degree. Mental health is connected with the capability to resist. The experience of suppression, mere heterodetermination, or simply determination by chance, as well as of breaking free will without the capability to resist is destabilizing for the human organism, and potentially deadly (cf. E. Langer 1974). See D.10.

19. ON THE CONCEPT AND THEORY OF IDENTITY

A discussion is presented in terms of theses. For the time being, "identity" is conceptualized as *parallel identity components* with their corresponding functions. According to E.31(3), identity components are *integrated as consciousness of action and as capability of action* as coherently as possible. The connection between personality and identity is exemplified as being the direction and self-organization of *development* and as *"achievement"*.

Thesis 1: Resistance and immunity in terms of health, and against hypnosis and indoctrination are *fundamental functions* of identity, in the sense of a principle of survival. Psychosomatic factors help to build up the *sphere of the individual, or more precisely of the body feeling* (cf. A.9). This in-

cludes functioning axes and polarities according to a programmatic *axial theory of health*[32]. The sphere of body feeling forms part of one's social and sexual identity. See B.12D [Marginalization & social identity].

Thesis 2: One has to act in accordance with one's self-image, the hierarchy of one's values, beliefs about social association, i.e., social consciousness or consciousness of reciprocity, and about reality, in the sense of a *congruence of thinking, wanting, and acting.* The values and beliefs referred to support and found components of personal identity. See D, F and E.13 on the *normatively restricting general framework,* the freedom of the other person, and the structural conditions of cognitive, moral and social judgement. See Bunge 1989.

Thesis 3: The *individual differentiates in interaction with the "other person"* (in terms of contrast, commonality, relations) and/or with "the environment" (in social, atmospheric, group-specific, or group-dynamic terms). Personal identity is *episodically developed,* especially by (interpersonal-interactive, local-contextual) contrasts. These lead to convergence or divergence in certain dimensions of ego-development:

(1) The world outside is appropriated.

(2) The world inside is built up:

(a) in contrast to and in exchange with partners of interaction,

(b) with a direction of development (by conforming, coherence forming feedback):

- with regard to the body schema and the sphere of body feeling, with regard to a "feeling of us" and the social schema of "closeness,"

[32] This *program* is preliminarily defined, for example

- by means of the central and vigilance axes in P. Nogier's auriculotherapy, and by means of the energy axes in M. Chia's Tao Yoga healing system;
- by means of the theory of muscle direction: oral vs. aboral in the gastrointestinal muscle system, papillar vs. retinomacular in the papillomacular bundle of the eye, genital vs. urinal vs. anal in the urogenital vs. gastrointestinal system;
- by means of Nogier's finding of the "first rib" in the system of skeleton and pulmonar muscles, and M. Chia's theory of the M. pubococcygeus (what he terms the 'love muscle'; reflection of all ring muscles of the human body therein; cf. I.*References*; according to this theory, an injury by anal intercourse affects the corresponding reflexes which are based on a continuous normal tone of the muscles;
- by means of (harmonized) meridians in terms of acupuncture;
- by means of the theory of the polar control of blood supply (warm – cool; cf. Monnier 1983); as a search and addressing mechanism, cerebral blood flow seems to be controlled voluntarily;
- by means of the theory of function-defined and polarized body openings according to Hindu yoga and the like.
- See A.1 [Hox; inter alia, the encoding of centromeres which are relevant to the division of cells].

- as a selective reinforcer of ego-development in the sense of a channel or facilitator of development (positive or negative-traumatic).

Thesis 4: Identity as a *"sense of belonging"* or an *"affiliation"* is complex, involving different dimensions and hierarchical levels:

(1) The sense of belonging to localities (in growing geographical size).

(2) The sense of belonging to certain social contexts.

(3) The sense of belonging to localities of a different geographical size, *"cross-connected" or intersecting* with different social contexts. We are dealing with a subset of a population considered in isolation or in comparison.

(4) The sense of belonging to a legal community and to a sphere of legal consciousness and validity.

The sense of belonging is a self-attribution. It should be considerably stronger than the heteroattribution by another person. One "attributes a sense of belonging to oneself (or disputes it)". Thus, identity can be in *local* terms: household, family, neighborhood, community, valley or region, country, federation of states; in *contextual* terms: family-related, professional, communal (or according to E.5-7 [contexts of relations]); *cross-connected*: religious, philosophical or political-ideological, linguistic, professional in interregional and nationwide terms; according to the consciousness of a *legal community*: national state, federation of states, global, in the sense of a constitution, in the sense of valid rights within the framework of the European Union, and planetary in the sense of human rights; this can include, in particular cases, dissent, in the sense of belonging to a community of legal conflict, for example, to a community wherein the legal right of individual self-determination with regard to abortion is withheld.

Thesis 5: Identity *as self-realization* or as part of self-organization is *never unconscious,* but is conscious, or pre-conscious at the most. This type of consciousness is not occupied by opinion leaders or seducers, by means of ecstatic enthusiasm, by means of collective pride attributed from an outside source, or by means of irrational propaganda. Conformation and the consolidation of identity components are based on conscious resistance in terms of health and against group pressure, on conscious self-attribution of identity components (in contrast to heteroattribution, perhaps in argument over it; or in sociological contrast to "labeling") and on consciously wanted contrastive development (cf. Thesis 3). But it is possible that such a conformation appears to be self-evident and automatized. See D.23-24; E.9/10, 31; F.1.2(e) [Model of the responsible citizen or *citoyen*]. A repressed, dissembled or mixed-up identity is an *identity loss.* This is the result of theatrical-symbolist ("uncomprehended"), propagandistic, de-indi-

vidualizing, intolerant, or rather fundamentally anti-cognitive forms of socialization.

Thesis 6: Identity can be interpreted *as being a mechanism* to produce *personal balance* in cognitive-affective, psycho-social and health terms. The mechanism produces or maintains such a balance, or else it has difficulties. The mechanism consists of the capability to process situations and to produce accordance with oneself, even in the sense of a naive pre-understanding of oneself (cf. D.10/11; E.12). Eliminating stress forms part of it. See E.19(2), E.31(3) [Integration of identity components], E.33 [Peace of mind].

See G.2 on identity as a life principle and as sense of survival.

DIMENSION	**FEATURES SPECIFIED**
Resistance, immunity; sense of survival	Health, sex; against hypnosis & indoctrination (Thesis 1); cf. G.2/3; against stigmatization & marginalization (B.12D)
Congruence of thinking, wanting, acting	Self-image (E.12); value hierarchy; (social) conscience (F) & self-organization (E.V); cognitive, moral, social judgement (E.13)
Developmental mechanism: differential development in social interaction	Contrast, commonality (Thesis 3); coherence (E.14-16); autobiography (E.12); curriculum (E.11)
Sense of belonging, affiliation	Locality, social context; loc. & social context cross-connected; legal sphere (Thesis 4)
Self-realization (incl. self-actualization)	Conscious(ness); unconscious = identity loss (Thesis 5; D.0.3(3); E.31)
Mechanism to produce personal balance	Consciousness: cognitive-affective, psycho-social, health balance (Thesis 6; F.1; D.18); “peace of mind” (E.33)

Table 2: Dimensions and features of identity and identity development

The concept of identity can thus be characterized in terms of *mechanisms* of *development, balance or congruence, self-actualization* and *senses of survival* and *belonging (affiliation),*

20. SELF-ORGANIZATION: APPROPRIATION OF ENVIRONMENT AND EXCHANGE; FEEDBACK, GOAL-ORIENTATION, CONSCIOUSNESS

Intermediate Résumé: *The property of systems to learn, to appropriate the environment, or to be in exchange with it is called 'self-organization'.* 'Self-organization' among higher living beings such as Man refers to feedback with central goal-orientation, attention, phases of appropriation and consolidation. Here, self-organization implies *consciousness* (or at least the central components of it). This is necessary for *memory formation and the execution of action.* Self-organization in this sense is also *self-regulating*: crises and disturbances are buffered, or rather resolved and the *maintenance of identity* as a balance, harmony or principle of survival *is striven for*, with the additional feature of building up a *self-image*. *Autonomy*, *joy of life, and mental peace* belong to the *goals* of self-organization (cf. E.31-33).

Contents of self-organization are differentiated by domains of relations (E.5), forms of perception and action (E.6) and by functions (E.4).

V. SELF-ORGANIZATION AND SELF-STABILIZATION AS OPTIMIZED PROCEDURES

21. SELF-ORGANIZATION AND SELF-STABILIZATION AS TECHNIQUES OF SHAPING LIFE

The *"organization of life"* and the *"conscious development of one's personality"* are *techniques*, i.e., optimized and standardized procedures. They form part of the procedural aspect of the system of personality and are, thus, an important part of self-organization and self-stabilization. In terms of content, they represent processes of learning and control. Shaping one's life and developing one's personality *integrate* the more externalized aspect *of orienting oneself in everyday life and managing it*, and the more internalized aspect of a *long-term program for the acquiring of capabilities.* The *decision* underlying the conscious development of one's own personality reads*:* "I strive for these goals, and I want to go in this direction and to develop myself" (cf. E.16).

The concept of *self-stabilization* is explicated *as resistance to decay, as crisis management* (resolving a crisis, a problem) and *as consolidation.* More specifically, the concept of *focus* (E.25) tries to do justice to the

shaping characteristics of self-development and self-stabilization, in terms of crisis intervention and the consolidation of learning and experience.

22. CRITERIA FOR PERSONAL ORGANIZATION OF LIFE

The following thoughts may serve as criteria for a personal program of learning or development:

1. Task orientation: We try to act or conceptualize in a task-oriented way when we think about "shaping life". What are the goals? What kind of information do we need for orientation? Which schemata of action do we need in procedural terms, which are the activities we must be able to master? The distinction between problems of organization, of decision-making and of the development of ideas as a subject matter is basic (Saader 1977). Task orientation includes the *formation of "blocks of time"* and the avoidance of their *disruptions* (=*stress;* cf. D.12(2)).– See A.16, H.3.5 [Scientific problem].

2. Orientation towards joy, happiness and hope: The three affective-cognitive components are to be integrated.

Joy: Joy is experienced situatively and consciously, and can intensify over time. It is possible to limit negative affects to the necessary minimum. Moments of joy become "zest for life", in the sense of an attitude "of being always full of the joys of life" and of a corresponding capability to act (cf. E.32).

Happiness: I distinguish "happiness" as an internal state produced by oneself from "luck", which can represent something material, and an external incident which is not controllable and happens by chance. B. Russell (1930) distinguishes unhappiness from happiness. We avoid: (1) rivalry (affects at the expense of second and third persons, violation of standards of fairness; structuring social situations as a "problem of imposing one's will on somebody else"); (2) a vicious circle of excitation, boredom and tiredness (the break-down of a cycle of energizing or a cycle of regeneration): the problem of deficient thought and deficient consciousness of leisure time, partnership, or family and friends; (3) envy, prestige and swank (extreme need for recognition; structuring putative personality development as a zero-sum-game against fellow human beings: where one wins, the other loses; classifying the world into winners and losers); (4) fear of criticism and persecution mania (dependency on the opinion of others instead of consciousness and reflected decidedness). Regarding the positive factors which, according to Russell, form part of happiness, I would like to point out *"impersonal interests"* which go beyond one's own self and its

momentary feeling, and which objectively lie outside of oneself (i.e. *one's interests in subject matter or knowledge*). Russell recommends developing such impersonal interests. See also E.25 and H. *"Zest for life"* is a consciousness variable which implies a positive attitude towards life as experience, as expectancy, as saturation, as taste and as style (cf. E.32).

Hope: The expectancy of success and the orientation towards the future. "As long as we live it is not too late." "What do I really miss at this very moment? I can also resolve it, experience it or acquire it later (patience as a problem)." I concede learning ability and a margin of time to myself, and distinguish a phase of *learning* from a phase of *ability or knowledge:* in this sense I commit my consciousness and act accordingly. This perspective can be deepened by the maxim of action: "I learn life-long, even as an elderly person." This presupposes the capability to project (for example, a life plan) or, if necessary, the recovery of the ability again to make decisions and to act.

3. Orientation towards the ability to resist and to stand up in conflicts, and towards stability in personal crises: This includes consciousness and capability of action in resistance to injustice, laziness, behavioral incompetence, and antisocial activity. The solution to personal or interactive problems is emphasized. See D.17ff., F.5.2.

4. Social orientation "towards the other human being": We avoid begging for recognition from other persons. We avoid aggression and violent behavior, including malevolence against others. We avoid the projection of goals and of the future, at the beginning, onto friends or intimate partners; we remain conscious. If need be, we are content with conscious friendliness and restrained exchange. Some criteria:

(1) Reciprocity, i.e. the principle of equality. See B.6. A reference to Eric Berne (1961): General social relations, intimate relations and work relations are structured according to the schema: adults with equal rights vs. "immature, thus dysfunctional" parent-child-schema in regressive terms among adults.

(2) Consent, mutual agreement, no "seduction".

(3) Search for convergence: satisfaction in sharing or commonality, efficiency, and productivity in terms of problem-solving, cooperation.

5. Orientation towards "learning in freedom" (C. Rogers): Figuring out or exploring something on one's own, learning by doing vs. drill, repeating and imitating someone, without understanding. Here we deal with the fundamentals of stimulating fantasy and developing interests and motivation for achievement.

6. Orientation towards realizability or controllability: "What is under my control, what is outside of my control?" (cf. E.14[3(4)]).

7. Orientation towards truth, objectivity, soberness in reflective thought, evaluation, and decision-making: We do not want to fool ourselves or others. Self-deception veils things. We want to establish the facts and we want to respect them, and we want to consider the whole associated field or context. See E.30(2(3)).

8. Positive affects and their functions (a summary; cf. A.9):

(1) Objectivity; functional for the orientation towards tasks and for confrontations.

(2) Friendliness; functional for social behavior towards second and third persons.

(3) Interest; functional for the orientation towards tasks and for social interaction; willingness to communicate.

(4) Solidarity; functional for social association; cf. E.13(3(9/10)).

(5) Joy; the central positive affect, uncorrupted by sadism, masochism, or domineering behavior; the basis of the "zest for life" (cf. E.32), and tasteful enjoyment, but also of "achievement".

We try to produce these positive, affective components generally in our lives as we become aware of those traits or situational examples which are central to each of these affects. The affects mentioned belong together, and form – if correctly applied – a coherence which is ordered functionally according to domains (or contexts) of action and living.

23. OPERATIVE CONCEPTS OF ORGANIZING LIFE: LIFE PLAN, FOCUS, DAILY PLANNING

1. Life plan: Firstly, I introduce the concept of a "life plan". It deals with *long-term* life goals. This concept could be operationalized as follows:

a) To find an intimate partner; perhaps to found a family (cf. Russell 1930; he conceptualizes family as a positive source of happiness).

b) Security; including possession and old age security.

c) Development of interests (fantasy).

d) Perhaps: dealing with the fateful events of long-term effects (e.g. disease, accidents).

e) Perhaps: development in one's profession (consciousness of role and achievement).

As dimensions of content, one has to consider intimate relations, work relations and social relations according to E.5. Cf. E.6.

2. Daily plan: Moreover, I propose distinguishing between "life plan" (long-term life-goals) and "daily routines" (planning everyday life).

Daily planning can lead to immediate self-stabilization. Important actions are planned immediately from day to day and can be carried out easily.

This is, however, a possible source for shifting attention from a long-term life plan with life perspective solutions to daily routines as dysfunctional replacement actions.

3. Focus: If daily routine becomes a vicious circle a third class of activities must be defined: a *medium range buffer* between daily life planning and a long-term life plan. The medium range comprises a few months or one year. The goal is to resolve a crisis, i.e. to stabilize oneself, or to create a focus to organize one's life or one's practice of life. Our life seems to "fall apart" or to get lost in everyday life. We create a concept to come back to ourselves under several criteria (see below), to sharpen the *consciousness of our life (for example, as a structural image or as a direction[33]).*

4. Summary:

(1) Life plan: The topics for discussion as proposed are "existence and identity"; "wish and reality"; "self-realization, boundedness and destiny (fate)"; "saturation and fulfillment" (E.6(4)); "achievement and private life". See E.25(4(4)) [long-term obligation].

(2) Daily planning: The topics for discussion proposed here are the "organization of basic needs and deadline-bound tasks", "energy and work" and "tasteful enjoyment and regeneration".

(3) Focus: The topics for discussion proposed here are "program, problem-solving and achievement", "energy, concentration and capability", "orientation towards goals and direction", "intensification (of the ability to experience, to enjoy tastefully, of factual interests [i.e., knowledge] and the like)".

24. THE FORMATION OF A BUFFER: "FIRST THINGS FIRST"

The idea of a buffer can give back to us the capability to act. The technique for doing that is: "first things first" (V. Schoeller, "Management of Time"; cf. A. Lakein 1973). A short description follows.

We write down problems with regard to our lives and personality development by brainstorming. The fact of writing them down makes us conscious. We *sort out* the ideas on our problems into A (important), B (rather important), C (less important). This is *purely subjective* and serves exclusively for the *restoration of our capability of acting.* We determine a volume arbitrarily: e.g. 60% of our time for A problems, 20% for B problems,

[33] I first introduced the concept of focus as a concept of organizing scientific studies, i.e. as a "semester focus", as well as an affective daily life of learning and studying in my introductory courses and in my work as an advisor to students.

20% for C problems. You can fix the volumes a bit differently. We have crisis and routine actions which are unavoidable: keeping certain deadlines, for example, an appointment with the dentist. The rest (of our leisure time) is available to turn to our *subjectively* most important problem. We choose, perhaps, up to three problems for the coming days, weeks or months, and remain with the most important one. It does not matter if we manage to work only on this one single problem: We work on the subjectively most important one. Without this method, we would not even know which problem we should address. In supplementing this procedure, we can take into account the outline of relational and perceptual dimensions of content (E.5-7) and the report on the capability of cognitive, moral and social judgement (E.13; cf. E.11(7)) and on coherence (E.14-16).

25. FOCUS: DEEPENED STRUCTURAL EXPERIENCE, COMPREHENSION, DEVELOPMENT OF FANTASY, INTERESTS AND PROBLEMS AS A PROJECT

1. Explications of the concept of "focus": A focus can be a plan, a project or a program. A focus (cf. E.23) is determined as *structure-forming.* A focus can have *different lengths in temporal terms*: e.g., weekends, vacations, several months, half a year, or one year. We are dealing with a *buffer* and with *actuality* (in the sense of an actual plan of action). The buffer may serve to *increase concentration and mental energy.* A consideration of the relational and thematic dimensions (E.5a-e) and of the self-image (E.11-12) can generate ideas and guide reflection. Possibly, we look for biographical items to take up so that we can *continue* to develop them, or develop something different, or something new, *in contrast* to them. Further criteria and procedures are (cf. Table 3 below):

2. Centeredness on themes, problems, or structural crises: Several thematic dimensions are contextualized, or bound in the form of a *personal project.* Such a personal project can be planned and prepared carefully. Proposals for that are contained in chapter H. As a basis, we consider the formation of "impersonal" (in contrast to purely ego-centric) interests which lie outside of one's own personality in objective terms and go beyond one's own momentary feeling (cf. E.22(2)). The starting point can also be formed by *perceptions (interest in subject matter).* Crisis and self-stabilization are dealt with in E.28, problem development in H.3.5 (cf.A.16 (4/5)).

3. Formation of structure: This is achieved by striving towards coherence and increasing coherence (cf. E.14-16 as well as H.4. H.4.1). In doing this, we emphasize:

(1) Saturation (incl. satisfaction, pleasure, tasteful enjoyment; [systematic] knowledge).
(2) Style, taste; defining tasteful enjoyment.
(3) Well-integratedness, differentiation in terms of content or even system.
(4) Self-determination (of the project and its elaboration).
(5) Direction of development or of the growth of knowledge.

4. Deepened experience of structure: This consists in comprehension, in the *perception of contexts or interconnections,* possibly in communication, in being together, in shared exploration and inference (together with the partner, the family or friends, i.e. in *deepening a relationship),* or in *conscious tasteful enjoyment.* The form of experience is conscious, appeals to the senses, and differentiates between meaningful features.

(1) Saturating situations, experiences: We are dealing with volume, intensity, and comprehension in experience, e.g. of landscape, visits to restaurants, arts (film, theater, music, museum, gallery), meditation, yoga, workshop, reading, study, etc.

(2) Build-up of concentration, energy and coherence: Do several episodes of structural experience build up successively upon each other, can they be integrated and lead to higher consciousness or deepened comprehension? Can they be continued?

(3) Deepened comprehension: As an outline, H.2.3/2.4, H.3.3-3.5, H.4.1 may serve. A basic rule reads: Knowledge is not acquired as a mere end in itself or as prestige, but as something subjectively interesting and potentially useful, as a context, as something systematic (according to description, to the context of cause and effect, to problem and problem context; or according to an idea of construction and expression and to technical possibilities). A certain need or a certain dimension of life is, thus, not simply conceived of as consumption, but as a configuration which is built up and shaped, and as consciousness thereof.

(4) Deepening of a relationship: Intimate relationship may be considered here as an example. Fields of development which can constitute a focus can be of different kinds. See I.0.2, I.6, I.7.1 on psychosexual attitudes and behaviors. With regards to sexual repolarization, the build-up of energy and composing, cf. the annotations on the electrophysiological definition of a sexual schema which one holds (in contrast to flattening habituation), in I.7.2 as well as I.5.1 and I.5.2, the procedural concepts of “expectancy (contemplation)” vs. “[passionate] desire” vs. “caress”. This could include participation in a yoga or a Tao Yoga course (cf. E.27(4) [Neural techniques]). The note on sexually fitting partners in I.7.2 should be heeded: There is a limit to what one can achieve together. The criteria for finding a

partner are not dealt with here. This also holds true for the question of whether or not a couple wants their own children. Agreeing to long-term obligations (child-raising, debts, i.e. building a house) would have to be taken into consideration in that case. *General social relations* are in need of cultivation, and of conceptual ideas (in analogy to the cultivation of the atmosphere in an academic institute; cf. Saader 1977).

5. Development of fantasy or interests: This includes stimulation by literature and visits, regarding or studying "gestalts", i.e. compositions, forms, configurations, "systems", learning by doing, or "do-it-yourself" (cf. H.2). As examples:

(1) Painting, photography, technical and crafts work,

(2) Systematic learning or studying (courses; leisure time group; self-education). One should be aware that this behavior should be experienced as self-determined as far as possible.

(3) Reconnaissance of nature (e.g. botanical garden; wild life; landscape).

(4) Conscious cooking and eating; social joy and participation.

(5) Travel abroad: The factors of tolerance, of unobtrusive interestedness, unfamiliarity with living habits, culture, landscape and climate may perhaps form special points of reference for defining a focus, especially for consciousness formation in terms of experiential contrast. Social destinations are explored by traveling, hiking and visiting. Numerous alternatives in substantial terms can be imagined in this context.

6. Profession: Further qualification, thematic interest development and *striving for achievement* as plan, program or one's role comprehension is to be considered here (e.g., a language course, new developments in one's own profession, development of awareness at one's work place or the like).

7. "Self-modification": This can become the objective of a special focus: "I do want to change in the following way and I do strive for this change actively in my life." This can include an even fundamental change in *direction,* or a *reorientation* in life goal and life style, or a sharpening of identity. It can mean, too, that one cannot stand certain traits of one's own and that one wants to change, correspondingly. Self-modification can also be agreed upon with a counselor who would monitor the result.

8. Explication of the Property Matrix (Table 3): "Starting point in terms of content" refers to the initiatory structure of contents (for instance, an interesting topic) and the derivation of the initiatory problem. *"Focal capability"* (comprehension, relation, interest-formation, taste/style, perception), *"Focal goals"* (as goals and anticipated results of focal capabilities), and *"Dimensions of development"* (as domains and high-level aspects of the dynamic and learning system of Man) are distinguished as components of personality. As features of a focus, the "Project (as a plan or program

defined in terms of procedures, goals and content domains)" is distinguished from "Structure (structural conditions; formal features [of the facilitation] of doing and learning), "Main emphasis" (the efforts of working to be invested in a certain dimension of contents), "Duration" (the time allocated to operations within a certain focal dimension). A "focus" can imply questions of a "metafocus" which refers to the integration of Man as a personality system.

FOCUS *Dimensions of content* ► Features▼	***Starting point in terms of content***	***Focal capability***	***Focal goal***	***Dimension of development***
Project (plan, program)	Theme / problem / crisis	Comprehension	Knowledge, system	Cognition, insight / control
		Relation	Experiencing, being together; cooperation	Intimate / work / social
		Interest-formation	Points of reference, motivation	Fantasy, stimulation
		Taste / style	Tasteful enjoyment, fulfillment, expression	Personal integration, preference
		Perception	Experience	Saturation, structural resonance
Structure (structural conditions)	Task	Creative organization (heuristics)	Formation of schemata & prototypes	Well-integratedness, differentiation, balance
Main emphasis	Specification	Elaboration	Acquisition	Orientation towards goals, experience, results
Duration	Weekend or longer	Changing or permanent	1/2 - 1 yr. [?]	Changing or permanent
Metafocus (procedurally defined)	Self-image, identity, degree of acting capability; self-modification	How to organize life, everyday life, or focus; "plans"; "self-esteem"	Autonomy / self-realization; zest for life; peace of mind	Coherence; cognitive, moral, social judgement?

Table 3: Dimensions of content and formal features of a focus [Items 4-7]

26. CHANGE OF FOCUS

1. Change of focus: This could be brought about after some time, e.g., after half a year or after one year, according to the points of view of "differentiation" vs. "well-integratedness" vs. "self-determination" (see E.14ff. [Coherence]). Another aspect of personality development is consciously experienced and is "trained". In this case, we are dealing with proposals. The change of focus enables the linearization of aspects of personality development or planning of life ("not everything at the same time").

2. Dimensions of focus (examples): One could try out:

(1) "Component (detail)" vs. "context or system": i.e. learning to know further components or acquiring an overview or an insight into the interconnections of a system.

(2) "Foundations" (theory) vs. "applications" (praxis).

(3) "Thinking (incl. methods, techniques) and knowledge" vs. "presenting (and communicating)" vs. "decision-making and action".

(4) "Crisis solution" vs. "elaboration of a life plan" vs. "acquisition or consolidation of a certain capability" vs. "finding, forming, deepening and consolidating interests" (vs. "achievement").

(5) "Enjoyment, taste, and quality of experience" vs. "achievement".

27. BASIC STABILIZATION OF THE SELF: SELF-PROGRAMMING / STRESS-MANAGEMENT / STABILIZATION SCHEMA / IMMEDIATE AID

0. Conceptual explication: Self-stabilization is explicated as *resistance to decay, crisis management* (crisis resolution) and as *consolidation.* Here, points of view on the basic stabilization of self are proposed. See E.21.

1. Remembering positive events: Generally, in heightening one's zest for life, I propose to reverse the list of our daily worrying thoughts *("worry list"* according to K.M. Colby) into a list of past positive events through which personal positive events (not at the expense of other persons) are remembered. The goal is to produce a more balanced or *positive basic mood* by means of corresponding memory activation (self-programming) and, thus, the avoidance or leveling of stressors or their transformation (cf. D.12(2)).

2. Anticipating the worst: Another technique is to become conscious of the worst that can happen in a stress or crisis situation, and to try to form a *stoic to harmonious* attitude towards it. *Anxieties* must become *conscious* in their contexts of situation; only then will they become *controllable.* This can include consolidating the control of situational *components* or rather of

schemas of situation, with their parts that have to be coordinated. See A.12-15. In case of anxiety about examinations, complex situations are decomposed and the affective burden is limited, correspondingly, to the current actual situation.

3. Positive resignation: Techniques of consciousness include a recommendation by B. Russell: "Positive resignation". You have put the outmost efforts into your project, but it did not work. You decide to give up a goal, to let another person go, to resign from an office or to lay down a task, *without negative feelings, in full consciousness of a termination, and in openness for new experience.*

4. Eliminating stress: Stress blocks thinking, deliberation and action. Successful techniques of eliminating stress and restoring a capability of acting and of uptake (in communicative or perceptual terms) include: *Transcendental meditation* (the reinforcement of theta-rhythms and the desemantization of brain waves[34]) and *Reiki* (dissolution of blockades of tension in muscular and neural terms, and the increase of energy; normalizing blood supply, especially superficially). The offer of meaningful *neural techniques* is worth the price, is diverse and successful (e.g. Mantak Chia's *Tao Yoga* which is primarily based on ancient Chinese traditions in conceptual and procedural terms).

5. Stabilization schema: Self-stabilization has to be brought about by self-observation, self-analysis (possibly in discussions with a communicative partner) and breaking up negative resonances. See E.28.

The general order of steps is: 1. Turning to health problems (illness, stress, exhaustion, pain[35], nutrition). 2. Applying psycho-techniques to produce calm (rest) and ability of concentration (cf. E.22(1): forming blocks of time, avoiding interruptions, i.e. stress). 3. Forming a focus: turning to crisis resolution or problem resolution, or to the development of thematic interests, or to the organization of life.

6. Immediate aid: As immediate aid in case of *affective stress,* the following recommendations can be tried out:

(1) Combined change of situation, locality, persons and affect. The affective orientation is now supportive, including, and social. Communication is changed by the change in the persons present. The change in the situation

[34] Cf. Brammer 1991:93. Let yourself be trained by a specialist. The mantra – the syllable – must, among other things, be meaning-free.

[35] Cf. Ch. Antaki & Ch. Brewin (1982:168) who refer to an interesting application of attribution theory. In order to alleviate physical pain, *reattributions* of pain are tried out: (1) Somatization, i.e. concentrating upon one's feelings of pain; (2) imagined disregard; (3) imagined transformation of pain; (4) imagined transformation of contexts; (5) relaxation and deep breathing. Changing attributions can have therapeutic affects.

leads to binding a problematic affect-stressed schema or an affect-ridden episode.

(2) To secure the capability of managing daily life. The capability to act is secured in daily life by the written elaboration of routines or lists of things to do *(daily planning).*

(3) Switching cognitively by means of written notes to:

a) Minima of existence (e.g., money, apartment).

b) Minima of identity (e.g., self-esteem, role).

c) Thoughts of alternatives. If desirable and possible: planning a program of reflection and learning.

d) Mobilization of systems of support (cf. E.14(4), last paragraph).

VI. CRISIS ANALYSIS AND RELIEF FROM DISTURBANCES AS SELF-STABILIZATION

28. FROM CRISIS TO SELF-STABILIZATION

A checklist or short guiding outline is presented. In detail, this includes:

1. Crisis in intimate, social or work relations (see E.5-7):

(1) General assessment: What does the crisis consist in? What kind of a crisis are we dealing with? Who is concerned?

(2) Analysis of causal structure: What is the cause or reason for the crisis? If adequate: Who or what kind of personal trait has caused the crisis? (Where does the "locus of control" rest?). In affective terms, a possible attribution of fault or guilt as a source of permanent irritation is to be avoided (cf. E.30(1)).

One should carry out these two steps oneself. If necessary, we have to give an outline to everybody with whom we talk about the problem.

2. Crisis structures and orientation of action:

(1) Are the persons (for example, intimate partner), goals or direction of life involved to remain unchanged or not?

(2) Some disturbances and crises in relationships can be resolved only (a) in the case of intimate relations, by separation and recognition of the incompatibility of the different wills, (b) in the case of work relations, by transferring the person concerned to another team, or by changing the place of work, (c) in the case of social relations, by breaking off, or, in the very extreme case, by legal action.

(3) Is it still possible to act "actively", or is it only possible to react "passively", and/or to draw the conclusion and to orient oneself anew?

3. Controllability:

(1) What can be self-determined, what is heterodetermined, what is possibly chance-determined? That which is chance-determined is normally not controllable in terms of self-determination.

(2) Which structural conditions are objective and fixed so that they cannot be changed?

(3) Which structures are subjective (relative attitudes and evaluations of one or the other of the interaction partners) and can be changed (or not)? Here, we have to distinguish between the desire for harmonization and synchronization, and reality (two wills).

4. Substantial characteristics of crisis:

(1) Deadlines are to be expected to be stressors.

(2) Interferences in the *rhythms* of work, life, and interaction: In the case of intimate relations, these interferences can amount to physical aversion (very hard to change). The rhythms are sociomagnetic and biomagnetic ones and often activate cognitive or even evaluative components. In considering *processes* in work, life, and interaction, we refer to features of efficiency, function, and configuration. *Bioenergetic rhythms* are more difficult to influence than functional processes.

(3) Features dysfunctional to, and interfering with, work and goals.

(4) Diversity of goals and their priority as a problem of decision-making (simultaneity and importance as an issue in establishing preference).

(5) Needs and their satisfaction: Two or more persons, especially in an intimate relationship, are in principle two (or more!) [directions of] wills.

5. Blockade and frustration: What does frustration consist of, and what is its effect? We analyze the affective context, the possible (social) disturbances, and the obstructions of learning, decision-making, capability of acting, and also of [the current state of] well-being. For that, aspects of the schema-theory (A.10-17) could be important. The starting point could be exemplary episodes.

6. Boredom and disinterestedness: Is one's own interest desirable? Determining the absence of motivation: Chronic fatigue? Inability to react to the environment? Inability to see meaning in interests? Without goals and plans? What does flattening habituation consist of? Is the breakup of a relationship or of the pursuit of a goal or task *hoped for?*

7. Restoring the ability of acting: This might presuppose certain features of focus formation (see E.24/25). Removal or control of stress is fundamental (see E.27; D.12(2)). See E.31(3): It is suggested that one check the different identity components listed and look for problematic items. See D.25 [Table 1].

8. Procedural schema according to Brammer (1991:80-81): a) Becoming aware of the problem: i.e. to "admit" a problem, neither to exaggerate it nor to minimize it, nor even to suppress it. b) Naming the problem: (1) starting point at which we are now (confusion, doubts, pain, stress), (2) goal we want to reach. c) Naming the goals: transforming the problem into goals. d) Generation of alternatives:

As an example, Brammer (1991:81) refers to a couple who possibly want to get a divorce. "Problems of communication": "The immediate goal is to increase shared feelings, and the ultimate goal is to decide the future of the relationship." Identification of the key elements: Lack of clarity, lack of means, too little, or too much, communication, lack of time, decision conflicts, fight for power, inadequate expression of feeling; factual unchangeable personal incompatibilities (also comprehension, liking, but nevertheless physical interferences of rhythms, desynchronizations, or even aversions), desperate holding on; trial of living apart for one month; to write down together as a couple the pros and cons for the question as to whether or not a marriage counselor should be consulted who would guarantee an objectively regulated approach as a keeper of a record of the meetings on a non-interventionist basis and, upon that, with whom one would agree.

e) Making a decision between the alternatives. f) Trying out the chosen alternative: for example, the couple has decided to consult a marriage counselor. After three sessions, one could discuss whether or not the counseling has clarified the question of which direction the relationship should take (evaluation). In the negative case, alternatives are deliberated. Impulsive and premature decisions are avoided. g) Evaluation of the solution. If the chosen alternative comes close to step c) ['Goal'], the problem is considered as being solved. *Note:* A third person as a protocol keeper (d) and a rather early evaluation (f) seem to me to be basic, in case of an inability for decision-making, for a *problem solution in partnership.*

9. Refocusing the problem: What is to be dealt with *now?* The (daily) time devoted to the "true" problem should be *regulated quite consciously.* It should be possible to allocate time to other problems. Safeguarding the general capability of living and working has first priority.

29. DEEPENING: DISTURBANCES OF INTERACTIONS AND CONTEXTS / UNBOUND SCHEMATA

1. Preliminary note: Self-organization has, centrally, to do *with disturbances and their removal.* An analysis of the disturbed context is presupposed for removing disturbances of interaction, relation, or working.

2. Problem-relevant characterization of "context": This includes "I" ('ego'), "the other person" ('alter'), or "learning materials"; goals or tasks, motivation for them; initial knowledge or behavioral models or action or interaction schemata used (cf. especially A.15/16); situational features alien to, or interfering with, the problem.

3. Definition of a "contextual disturbance": Frustration of success, tasteful enjoyment, goal fulfillment (achievement) or harmony in a relationship: e.g., (1) because of a lack of initial knowledge; (2) because of a lack of clear goals, concept, or plan; (3) because of low motivation; (4) because of other person(s) with atmospheric effects which cannot be filtered out; (5) because of a lack of congruence of different wills of ego and the other person(s) with regard to wants, e.g. because of a lack of respect for the other, because of a lack of synchronized energy of the partners. The overall context remains *ambiguous:* positive and negative features continue to coexist. Two examples follow.

4. Dependency and unfocusedness as the (ambivalent) characterization of context: What produces *dependency?* The person, the atmosphere or the goal? For example, another small glass of brandy or wine, more visits to pubs in order to meet a new girlfriend. What constitutes *unfocused:* no goal, no schema of organization, lack of planning, lack of orientation towards new ideas, unclear criteria of achievement, for example, in solving a work problem? An example would be the use of irrelevant books, and/or replacement actions which do not belong here. These considerations lead to the concept of the "unbound schema".

5. Decentered and decontextualized behavior; unbound schemata: Behavior, action, interaction, communication, planning, working and problem solving are based upon the use of schemata. A functional schema is goal-bound, task-bound or context-bound (A.13(3)).

A schema can be isolated from its binding to a goal, context or situation; a schema of a person (or of persons) from personal binding as well. In the latter case, an "old" person schema or an inadequate role schema overlays interactions with "new" persons. We are dealing with an *unbound* schema which becomes independent of functions, e.g. within the process of work or of communication (in the case of an interpersonal schema of action) and leads to disturbances of concentration, function, and coordination among the partners participating in such interaction.

An example of communicative behavior: *Inadequate decentered reaction* (commentary: "Doesn't belong here", "goes slightly wrong"; *lack of fantasy* (commentary: "Recurs again", "same again"). Especially, we refer to *"mindless interruptive talk".* This behavior is brought about by a lack of goal-directedness, by means of an emotional orientation, egocentrism (self-performance), or rivalry orientation. In this sense, then, the ability to contribute, or adequate contextualization in terms of goal, objectivity, and a common task is lacking.

Disturbances are, for the most part, produced by decentered persons and by their decentered use of schemata. We are, thus, dealing with situation partners with one or more of the following characteristics:

(1) Asocial (does not integrate himself/herself, disturbs openly); megalomaniac.

(2) Dysfunctional (Thinking and behavior are not task-oriented).

(3) Uncooperative (A social situation is structured in rival terms).

(4) Goalless (disoriented, confused).

These traits of personality frequently break up sequences of schemata and destroy work rhythms and work routines.

In the following, we will distinguish between the unbound schemata of interpretation, reaction and affect (6.), and the unbound schemata of relation(s) (7.).

6. Unbound schemata of interpretation, reaction, and general schemata of affect (for example, "All people always want only evil"): It can be difficult to bind them or to resolve them. For example, it could be necessary to elaborate on the *cognitive antecedents* (entry conditions) of affects and their *cognitive* (and, perhaps, *behavioral) consequences* in the sense of the psychological theory of attribution. In this context, one has to take into consideration the fact that the unmarked entry and exit conditions of a schema of action might have been overlooked, or might not have become conscious, or that inadequate entry and exit conditions characterize the schema in general (cf. A.13(3)). See A.19.

7. Schemata of relation[36]*:* Situationally unbound schemata can include *general schemata* which are characteristic or *prototypical* of permanent states, or *for a relationship or a permanent social context:* for harmony, permanence, sentimentality, affiliation or a sense of belonging, security and the expectancy of all of that. Such schemata probably tend to bind easily to the alarm system which reacts to existential threat and serves survival (E.17-18).

30. IN SEARCH OF COUNSEL: COUNSELOR AND COUNSELING

1. The search for counsel and counseling: If one really needs a psychotherapist, or, even better, an existential counselor, as a resistance former, as a communicative partner or as a counselor, then one should remember that

[36] It might be fruitful to look at the distinction of hypothetical and categorical imperatives (J. Mackie, "Ethics", Penguin Books, 1990:27ff), or norms (G. H. von Wright, "Norm and Action", Routledge & Kegan Paul, 1963).

one must solve one's *own* problems. A principle in dealing with psychotherapists reads: self-consciousness, self-determination, capability of acting, especially with regard to conflicts in partnership, cannot be achieved on the premises that the therapist recommends *"foul language"* (hurting), antisocial behavior, and exercises of hate as a pose of overpowering or triumph, i.e., chooses the affective, unconscious, and unproductive path in counseling. *One, oneself, not the therapist,* must be able to solve a problem or, if necessary, end a partnership. This includes the *termination of negative feelings in order to be able to let the other person really go.* Negative feelings perpetuate or continue a relationship. See Brammer in E.28(8) as an objective and positive outline.

2. Criteria: Drawing the conclusion, a criterion for counseling follows for the therapist, and a criterion for seeking a therapist follows for the person in need:

(1) Social compatibility of proposals of counseling.

(2) Constructiveness of proposals of counseling (applicability, learnability, relevance for problem solution, goal-orientation; temporal limitation of counseling).

(3) Objectivity, soberness, efforts towards truth as goals of counseling.

(4) Consciousness, explicitness, and effort towards precision as the basis of forming resistance, of the will of self-assertion, and of generating the capability of thinking and acting with the person in search of counsel.

3. Clarity of roles: The therapist as a counselor and problem-solver, not as an "agent provocateur"; the person in search of counsel as a communicative partner, listener, thinker, and decision-maker. The person in search of counsel should remain as critical and as independent of the counselor as possible, and the counselor should support this in the spirit of his/her professional ethics.

VII. ON THE GOALS OF SELF-ORGANIZATION

31. INDEPENDENCE: THE AUTONOMOUS PERSONALITY

1. Explication of independence: Independence has been explicated as follows (E.3c): For all questions which concern a person himself/herself, the following may hold true: every component which is relevant for a decision or an action is, in principle, mastered by one's own self, applicable by one's own self and conscious to one's own self. *In detail,* this includes schemata of action, procedures of planning, and problem-solving (cf. A.10ff). Moreover, it includes the capability of making *daily planning,* if

feasible, with regard to the basic dimensions of everyday life and course of life (E.5). It also includes the control of concepts and skills within the framework of one's *professional* training and, possibly, of a *general education or, better, general orientation* (cf. the table in E.11). Not included are specialist competences, e.g. surgical or notarial ones which one might sometime need: Self-healing and the social or juridical validity of one's own acts have their limits.

2. Critical ability and independence from other people's opinions: The ability of *cognitive, moral and social judgement are realized* as components of one's own consciousness and of one's own autonomy, and they are *mastered and applied on one's own*, above all independently from normative pressure or propaganda (cf. as an example Arne Naess 1966). The *resistance* against group pressure, the *independence* from other people's opinions and *objectivity* are basic for one's own *autonomy.* Acquiring the ability for making one's own judgements reinforces personal freedom and is a precondition for exercising one's own free will. Independence includes the responsible use of free will. See D.6/7, 13ff, 16 [Inner freedom]; F [Conscience].

3. Capability of acting and personal integration as independence: Being an ego capable of acting, an autonomous personality includes the aspects of one's consciousness of oneself and, to a large degree, of the *procedural control of the following identity components:* 'striving towards personal coherence' (cf. E.14-16), 'self-control' (cf. E.17/18, 27), 'physical (not necessarily belief systems-related) immunity' (cf. E.19(1)), 'congruence of wanting and doing' (E.19(2)), 'developmental differentiation, i.e. development in contrast and affiliation' (as discussed in E.19(3-4)). 'Conscious personal capability of acting' includes the conformational, i.e. the *efficiency increasing coupling* of the identity components mentioned. The *integration of ego* as an autonomous personality is *incompatible* with the idea of an *unconscious* ego (cf. E.19(5)). Striving towards consciousness and the analytical clarity of thought is conceived of as being a component of autonomy. The need for personal recognition, the drive for personal appreciation and prestige create dependency and can be incompatible with autonomy and integration.– See D.0.2(5/6), D.16(5).

Capability of social acting and *personal integration* also include *an awareness of other people,* of social events, of life processes in general [e.g. the *dimensions* of age (E.11(4), I.6i), of one's profession (E.10) and social environment (E.9, F.2)]. These factors are not to be left in the unconscious nor are they to be delegated to another person's consciousness. This idea helps to *encounter* other persons *"consciously"* in social exchange. It contributes to explicit *reciprocity* and to *reality-based social be-*

havior. The moral aspect of integration is *integrity.* This includes the capability of moral judgement, especially of how to deal with one's own conscience (cf. E.13(2), F).

4. Tolerance: Independence includes tolerance to a reasonable degree. In principle, other people are different from oneself. This holds true, for example, for beliefs, life goals, taste, and style. Normally, this does not hold true for certain needs such as the limitation of the level of noise, peacefulness, veracity, and justice. Here, one will rather hope for shared interest, or insist upon it. One can learn tolerance. We conceive tolerance and the resistance to intolerance as being the bases of living together in a modern democracy and in a multicultural community. This includes the adequate management of differences of opinion, political opposition, religiously based normativity, forms of aggression, (social) conflicts, and lies. A basic rule reads: One should not permit injustice or antisocial behavior at the work place, in private or in public. The *interest of third persons* should be considered; *it frequently limits tolerance* (cf. D, e.g. D.6-7, 13-22 and F.1-2).

5. Autonomy includes creativity: I have tried to list the techniques of organizing life (e.g., formation of a focus) in subchapter E.V. They can help us to learn, to deepen, and to consolidate autonomy. Independence in producing *ideas* and in *developing* structures or problems *on our own* (cf. H) opens the perspective to conceive *creativity as part of our autonomy.* This is a feedback: Autonomy in the sense of self-determination (for example, of a theme) and of "learning by doing" opens up our own creativity, and creativity, in turn, contributes to our autonomy.

32. ON THE ZEST FOR LIFE

1. Bases: Consciousness, self-control, and abstinence from drugs, euphoria, and obsession with prestige remain the key to self-organization and self-stabilization. The ability to *switch off negative affects* in oneself and in others, as well as *stress,* is a basis for "happiness" and the "zest for life" which remain goals of self-organization and self-stabilization.

2. Conceptual explications: The *zest for life* (Cf. E.22(2)) covers, above all, *sensuous* experiences such as joy, pleasure, tasteful enjoyment, and fulfillment; moreover, *active* experiences such as organizing one's life, awareness, sharing with others, curiosity, and achievement motivation. *In terms of volume and saturation,* the zest for life includes fantasy, (systematic) knowledge, expectancy, i.e., a sense of the future, intimacy, and the attachment to life on earth ('planetary consciousness' according to W.

Stegmüller and A. Rapoport). The zest for life is, thus, determined by sensuality, activity, and a saturating context of consciousness.

3. Continuing thoughts: I hypothesize that the *zest for life is a component or even an amplifier of the feeling of freedom* (D.10, D.24): Moments of joy become the zest for life in the sense of a continuous "life enjoying" attitude and a capability of "joyful" acting (E.22(2) [Joy]) which are tonic. One always understands one's actual situation within the framework of a personal direction of life or at least of a personal concept of life (expectancy, consciousness). Antonovsky's theory of the "sense of coherence" is postulated as a *theory which cross-connects* with the theory of the feeling of freedom and with the theory of the zest for life (E.14(4)). A concept of "self-realization" and of "peace of mind" could then lie at the center of these theories. Cf. D.24(2), D.25.

33. PEACE OF MIND

Galtung ([Freedom & identity] V/1980:433-434) asks the question: "Does 'peace of mind' become 'mental wellbeing, mental health', and to what extent can that be said to be the same as 'identity'?"– My interpretation:

1. 'Peace of mind': 'Peace of mind' is the *level of inner awareness of a harmonized personality*, even in the face of conflicts or adversaries, in conjunction with the *striving* towards perceived mental well-being. Inner awareness is defined cognitively in terms of features of mental well-being. 'Harmonized personality' refers to an electrophysiological state. Thus, peace of mind implies the three components (1) of *neurophysical harmony* (electrophysiologically defined as a predominantly alpha and theta brain wave pattern which can be produced at will), (2) of *cognitive consciousness* (defined by the characteristics of mental well-being = mental health) and (3) of *intentional activity* (to accomplish mental well-being).

2. 'Mental well-being': As 'mental well-being' I consider (1) the personal *criteria* for acting, living (also in its physical aspect), thinking, social and environmental exchange with which I, myself, agree consciously and centrally, as well as (2) a *corresponding practice of life.* The criteria include the consideration of the social and natural environment and the capability to relate to it personally [cf. E.31/32; E.21; E.13; F.1, F.7; D.25 / 26].

3. 'Identity': The *well-integratedness* of the conscious, conceptual, neurophysical, emotional or sentimental, social and action-related aspects of this harmony, these criteria and the corresponding praxis of life can be conceived, in my opinion, as being a *core of personal identity* in the sense of

E.19 (Th.2; 5, 6) and E.31(3) [Integration as independence]. Cf. D.15/16 [Inner freedom].

References: 154.; 157.; 7.; 8.; 63.; 73.; 28.; 49.; 79.; 86.; 119. *E.13:* 102. *E.14:* 37.; 13. *E.19:* 127. *E.22:* 104.; 136.; 15.; 128.; 161. *E.24:* 93: *E.27:* 12.; 136.; 24. *E.28:* 24.; 104.; 15. *E.31:* 111. *E.32:* 136. *E.33:* 57.

F. CONSCIENCE: ETHICAL AND NEUROBIOTIC STRUCTURES

0. AN OVERVIEW

I start out with an interpretation of the conscience in terms of a model: it is a comparator by means of which intentions of actions are compared with ethical norms. For this purpose, I assess the relevance of rational criteria for particular dimensions of action. Some explications relating to the concept of ethical comparison as an operation follow. Among other things, the concept of the "consequence for second or third persons" is introduced and is made precise in terms of content. The comparison itself is proposed as a schema of deliberation and of deontic conclusion [basic rule of conscience]. To this pertain criteria of generalization, and, among other things, the test of legality. In connection with the latter criterion, a short law-philosophical and state-philosophical sketch of ordering domains of legal rights (1.1), as well as of state goals, is presented. A heuristic rule of conscience for the resolution of legal and political conflicts is proposed (1(5)). By means of conscience, the individual obligation to defend another person against injustice and the threat to life is tested (2.). The range of this obligation is discussed, considering "close" vs. "distant" issues (3.). Cooperation in humanitarian organizations is considered as being a solution for the necessity to limit and select ethical problems to which one can turn (4). Conscientious decisions are learned episodically (5.) and are marked structurally (5.1). Learning can be facilitated in terms of a basic rule: One should make a substitution probe in which oneself takes the place of the person concerned, or of "the victim". Some learning problems in connection with group pressure are specified. The principle of decidedness is emphasized as a basis of learning conscientious decision-making (5.2). Finally, a neurobiology of conscience is outlined which seems to be especially interesting in terms of philosophy (6.): Conscience is identified with the subiculum as a comparator within Gray's neurobiological model of the limbic system (6.1), with the amygdala as a norm-relevant memory organ for reward and punishment according to Gaffan. The latter is combined with the argument of an operational definition of a norm (observing it leads to rewards, ignoring it leads to punishment) (6.2). The neuronal encoding of egocentric vs. allocentric in spatial terms (Rolls, Gallese) may represent reciprocity (6.3). An appendix of neurobiological data is to be found in (6.4), a formal appendix on Bunge's social and moral philosophy in (7).

1. PRECIZATION OF THE CONCEPT OF CONSCIENCE WIHIN THE FRAMEWORK OF A MODEL: ETHICAL COMPARISON AS AN OPERATION

0. Conscience: The conscience functions as a comparator. Actual intentions and their anticipated consequences are tested against certain ethical criteria (prescriptive rules of action), and are compared with them. This procedure of testing can be carried out even after actions have already been carried out. Abstaining from action can count as action. Among other things, the criteria of relative rationality are specified as conscience, e.g. objectivity, legality, justice, truth finding, social sense, or reciprocity, one's personal benefit. These criteria guide action and refer to the dimensions of action. In detail, these dimensions of actions are communication (B.7/Note 4), decision-making, representation, social reference, and the perception of personal opportunity. The application of the criteria of relative rationality can lead to reason-determined action. See D.19 [Revealing one's own authorship] and the references quoted in D.18.

The comparison or, rather, testing operation is spelled out as a matrix:

***Dimension*►** **Criterion▼**	*Communication*	*Decision-making*	*Representation*	*Social reference*	*Perception of personal opportunity*
Objectivity	+		+		
Legality		+		+	+ (–?)
Justice		+		+	+ (–?)
Truth finding	+	+	+		
Personal benefit		+		+ (–?)	+
Social sense / Reciprocity	+	+		+	+ (–?)

Table 1: Property Matrix of "CONSCIENCE" as *"Dimensions of reason-determined action"* / "Criteria of relative rationality" / "marked relevance (+) or doubtfulness (–?) in comparison and test"

For example, is "objectivity" fulfilled in *"communication"* and in *"representation"*? Is "legality" fulfilled in *"decision"* or in *"perception of personal benefits",* i.e. in contrast to *"social reference"*? It has to be tested, in particular, as to whether or not "(one's own) personal benefit" collides with "social sense / reciprocity" within the dimensions of the *"perception of personal opportunity"* and *"social reference",* and if such a collision is

legitimate (test according to the criterion of "justice"). The criterion of "truth finding", or the conscious effort to do so, is primarily to be tested for *"communication"* and for the *"representation"* of a fact, of an episode, or of a situation, as well as for a *"decision"* based upon it. For example, a deficient degree of truth or a distortion in reporting is to be reflected and corrected. The consequence of criteria fulfilled or unfulfilled is to be assessed. The following conceptual explications may lead to further procedural precision and contextualization.

1. Conceptual explications in the sense of "naive ethics":

(1) 'Intention of action' means: The action is planned, it has not yet been started or performed. The intention of action and the goal of action are distinguished from the result of action. Unintended and unanticipated effects may also pertain to the result of action.

(2) 'Ethical criteria': Taking into account point [0.], this refers to decision criteria in testing if there are consequences for second and third persons resulting from intended action. If "yes", it is to be tested as to whether or not these consequences for second and third persons are good or bad (in terms of evaluation), i.e.:

(3) Concept of (intended) action within an ethical context: Does the decision or action under consideration take place in an "(imagined) space of social interaction with other persons", and does this action have any effect on personal properties or on the possessions of these persons? What is enabled or prevented for second or third persons? The action intended is characterized in terms of their consequences.

(4) Concept of consequence in an ethical context: Are constraints, risks, damage, or even death for any second or third person to be expected as a consequence of the action? Proceeding consists in generating implications of intended actions "in accordance with the best knowledge available". For this, I would refer to the following works: Heider 1958, e.g. ch.10: "Benefit and Harm"; Abelson: "Psycho-logical Implication" (in: Abelson et al 1968) and Abelson, "The Structure of Belief Systems" (in: Schank et al 1973).

(5) Concept of evaluation and of the evaluated dimension (of the consequence of an action): Positive (in terms of advantage), negative (in terms of disadvantage) or neutral (not touched upon, unconcerned) in relation to health (in medical terms), well-being (in psychological terms) and the welfare (in material and existential terms) of any second or third person.

(6) Concept of second or third person(s): This concept is relative in relation to the *range* of an intention of an action. For example, global economic, security policy, or ecological intentions of actions imply different sets of persons in terms of second and third persons, in comparison to everyday

life actions at home (e.g., to go to the cinema, or to travel, alone, or together, etc.).

A note on responsibility in corporate or state organizations: A basic tenet could read: There are no special ethics other than (naive or) universal ethics. There are, however, special *responsibilities* according to (1) role or decision-making *influence*, (2) professional and special *knowledge*, including pertinent *information access*. From these two factors, (3) the liability to *assess health risks*, to explore and document corresponding parameters and/or dimensions of information, as well as (4) personal, *legal,* and financial *liability* (in terms of personal, corporate, or state action) follow. See D.19.

2. Testing as deliberation according to conscience: The following schema of deliberation tries to subsume two classes of action: (1) conceptualizing the intention of an action and translating it into an action; (2) deliberating the intervention on behalf of another person concerned or abstaining from that intervention. The schema of deliberation does not cover action in terms of legitimate competition, i.e., to apply for the same job like another person "involved" [principle of equality], nor does it cover the legitimate acts of criminal prosecution. The basic rule of intervention and of a corresponding interdict of the delegation of action reads: If one has the subjective impression that one is able to prevent injustice towards another person, then one is obliged to act. Not acting, or rather refraining from action, is here classified as being a form of action (cf. F.2(2), F.5.1). Simplified, the *schema of deliberation* could then look like this:

For all actors x, for all persons "concerned" y, for all actions A deliberated upon, and for all *(negative)* results of actions R^- the following holds:

(D1) Person x deliberates doing A.
(D2) If person x believes on the basis of the deliberated completion of action A, that a negative result R^- of that action would result for another person y, then person x should abstain from doing A.
(D3) If person x believes, on the basis of the deliberated completion of action A, that no negative result R^- of that action would result for another person y, then it is left to person x's discretion to do A, i.e. x is allowed to do A.

The schema of deliberation can be expanded into a *schema of deontic conclusion* in terms of reusing sentences (D1-3):

(D4) No negative result R^- is to be expected for person y.

(D5) Therefore, person *x* is permitted to do *A*. (= Permission)

The corresponding premise and conclusion in the reverse case reads:

(D4)* A negative result R^- is to be expected for person *y*.
(D5)* Therefore, person *x* is not allowed to do *A*. (= Prohibition)

D2 contains a prohibition, D3 a permission. 'Believing' can be replaced by 'expecting', 'concluding', 'inferring' or 'considering it to be possible'. In F.1 [0/1(0-6)], the cognitive space of expectancy and decision-making is outlined. The sketch is a heuristic and prescriptive one. The knowledge and the heuristic procedures necessary for inference can be acquired (cf. also F.2/3, 5.1, 5.2).

3. Ethical criteria of generalization (normative principles):

(1) Reciprocity: Equality, mutuality, equal rights (also among man and woman). See B.6, especially (2/3).

(2) Validity: General public ("holds for everybody, for all").

(3) Social proportion, proportion of means, legality: adequate in terms of (social) problems, adequate in terms of situation, adequate in terms of proceeding in accordance with formal rules.

4. Metaethical characterization: In terms of metaethics, the question is answered as to which principles an ethical system should follow (cf. D.12). Ethics should be based on the principles of *reciprocity, generality (and not particularism), proportion (not "out of proportion") and legality.* The principle of legality interconnects arguments from ethics, law studies and political science. See F.1.1 and F.1.2: In these paragraphs, individual conscience is contrasted with *the state as a public "externalized conscience":* The state must act and take the independent initiative to act in certain legal situations (F.1.1), e.g. in case of bodily injury, and for resolving certain tasks (F.1.2). See G.1 [Against obligation to suffer].

5. Rule of conflict resolution: A procedural rule by means of which legal and political conflicts can be resolved heuristically reads: *In case of doubt, the legal or, rather, ethical idea may be given the preference over the imperfect law* or even the unjust order. Arguments in F.1(4), in the second paragraph in F.1.1, and in the first paragraph of F.1.2, are contextualized by this rule. "Classical conflicts of conscience" are captured by this rule: it serves Man in his or her neediness and it serves the development of a more just society. The "inference" of a conscientious decision orientates itself by points of view which are developed here in F.1(0-6).

6. Preferential order of intentions of action: Goals are topologically ordered according to importance. For example, "crisis goal" in preference

to “long term goals” and the like (Schank & Abelson 1977). In ethical terms: In case of danger for other persons, one must help immediately.

1.1 ADDITION I: DOMAINS OF LEGAL NORMS ORDERED

A brief outline of a hierarchy of legal domains follows. It is relevant for the relationship between ethics and law.

Considerations in terms of law and social philosophy: Hereto pertain: the question of what are termed “state goals” (cf. F.1.2); conditions of social association, problems of regulations which become visible in the course of societal development (making new laws); social and individual needs and their recognition; and also intercultural globalization: for example, human rights as an open field. This is the basic domain for the development of new ethical and legal norms or, rather, principles.

Subordinated to this is the constitution, the highest level of formalized, sociopolitically passed (or decided upon) norms and ethical criteria. All other legal norms or, rather, domains of law are subordinated to these constitutional norms or criteria which concern fundamental rights. These domains of law include, for example, civil law, public law, state law, administrative law, labor law, commercial law, civil service law, rules of legal procedure, and criminal law.

International law regulates international relations in terms of international treaties and international conventions. Human rights are considered as forming part of the constitution in some countries. In the domain “criminal acts against mankind”, special regulation is desirable (e.g., international military court of justice, or something similar), especially when facing phenomena which resemble Nazism.

1.2 ADDITION II: GOALS OF THE STATE

Goals of the state ideally form part of the constitution (i.e., in terms of the preamble). State goals are *goals of control* which the constitutional political organizations – so to speak, as an “external conscience” – have to base their programs of action upon and which they have to institutionalize politically. The state goals might include the following *examples*:

a) The social state, social solidarity: at least basic needs are to be covered for everybody. The perspective of development could mean: the development and refinement of basic needs; more social justice.

b) Peace and support of development in terms of foreign policy, incl. the international order of peace and security; obligation for cooperation; and standing up for human rights and democracy.

c) For the European Union as a federation of developed countries, the following might hold true: the balance of labor, capital, nature, and the development of society; full employment or the right to work as a state goal.

d) Compatibility with nature or, rather, environment.

e) Individual development for everybody (free education, lifelong learning, individual health protection); the free and autonomous personality of the responsible citizen as a model.

f) The obligation to inform in public, to produce critical and independent comprehension, the obligation to reasonable tolerance; critical and independent mass media, and sciences. Freedom of religious belief with limits towards second and third persons. The separation of state and church or, rather, religion.

g) Constitutionality: the constitutional state; obligation to observe human rights; reasonable internal conflict resolution (avoidance of civil war); the offensive fight against organized crime, for example, against hard drugs.

h) The precept of democracy; the political participation of all citizens.

2. ACTION AS A SOCIAL OBLIGATION VS. ANTISOCIAL ACTION

1. Obligation to act: The arguments in F.1(0-6) point to a structural property of conscience to test the obligation of the individual to perform social action: the defense against injustice, and menacing the lives of second or third persons in the case of need or danger for life, and the demand for social solidarity. The reason for that is: If this does not happen, living together, and social association within the framework of democracy and of the constitutional state are impossible. If reciprocity is missing, one cannot hope for another person's help in case of one's own needs, or even insist upon it. With respect to the conditions of living together and of surviving, pertains the recognition of the following principles: (1) Verbal promise, declaration of intent and agreement as informal and legally binding principles, in contrast to arbitrariness and fraud; (2) critical solidarity, i.e., one does not need to identify with others, but one should support others in their individual rights to live and to access social goods in contrast to legal deprivation; (3) if possible, one should not hurt (no malevolence or malice), because this destroys, when accumulated in terms of a behavioral style, the informal atmosphere and social association in a community or society. The social obligation to act is to be supported by the following arguments, especially with regard to persons who act in public service or in the interest of the public (e.g., civil service, politics, economical organizations, health service):

2. Not acting, omission of action: Laziness, idleness, deficient social sensibility, and deficient civil courage to stand up for civil rights are possible subjective reasons for this. A deficient knowledge of the law, however, will never be acknowledged as being a legally valid excuse to omit action within Western societies. Not acting, and omitting action, are based upon a deficiency in legal and civil consciousness, and upon a form of socialization as a political subject, party line thinker, follower, or being dependent or seduced instead of being a *citizen*, i.e., a responsible autonomous member of society. Cf. B.7(3), Note 4.

3. Direct wrong-doing against legal and ethical obligations for the purpose of personal advantages and, e.g., political prestige, increasing personal, even sadistic, elation, and expanding personal or political party affiliated power: This leads to the destruction of democracy and the foundations of living together if not fought against and opposed to. The cumulative effect and its political reinforcement leads to the annihilation of social association. This correlates empirically with a higher crime rate, with inhuman social forms, with violent excesses, civil war or even international war.

4. Social consciousness and wrong consciousness: The situation of second or third persons is perceived consciously. We are dealing with questions of independence vs. dependency, of solidarity, of support or care vs. exploitation. Arguing from the view point of "naive psychology", F. Heider has dealt with these questions as *"reactions towards the destiny of another person"* (e.g., envy, compassion, sympathy). This might serve as a starting point for ethical and metaethical considerations.

According to F.2(2-3) the following items belong to *wrong consciousness*: to submit to the opinion pressure of a group (against better knowledge, and the like), to exercise party line adherence ("the party is always right"; "majority decision over legality") or to subordinate oneself to normative authorities (the "family council", the incompetent administration, the pastor, the Pope or, rather, the church, and the like) which are used as an excuse to abstain from adequate justification (reasoning) in principle. *Phony consciousness* is exemplified in terms of double standards within the domain of sexual behavior which thus violates the principles of equality, consent formation, and of the mutual protection of the personality as a sphere. Moreover, it entails an image of Man which is inhuman, autonomy preventing, and consciousness mutilating. Uncritical, irrational and antisocial behavior are an integral part of wrong and phony consciousness.

The consequences of the above mentioned obligations for learning conscientious decision-making are drawn in point F.5.1.

3. "CLOSENESS" VS. "DISTANCE" IN CONSCIENTIOUS DECISIONS

The decision to act in accordance with one's conscience within the international framework, i.e. to act in solidarity, with "engagement" (J.P. Sartre), encounters certain difficulties:

1. Problem of selection: How do I select problems of action which I "engage in" if these problems are more distant for me: according to the criterion of single persons or of a complete political context, of a country, for example? Because problems would multiply under the condition of equal treatment, my capability of acting would be blocked ("ethical over-demand or ethical demand in excess"). Selection becomes arbitrary.

2. "Closeness" vs. "distance" in terms of capability of acting: This refers to the arbitrary, but unavoidable distinction between "close" vs. "distant". "Close" is everything that concerns me directly: my domain of work, my domain of intimate and of family life, my everyday life behavior, my membership in a community and, already a bit more distant, in a political system ("my freedom is also the freedom of the other person"). The direct effect on my life and on my every day life is obvious. Trying to act according to one's conscience is required without exception.

3. Globalization of human rights: Perhaps the "engagement" for the "distant" concerns me only indirectly as a fellow human being, as somebody with a "planetary consciousness" (Rapoport; Stegmüller) to whom globalization, human rights, living together on this earth, and using and not destroying it, are conscious: Also freedom, security, and justice in other societies as a basis of existence and of the social identity of every individual human being, and all this together as a basis for international behavior and exchange with each other.

4. On capability of acting: The possible *arbitrariness (selectivity)* of the distinction between the *"close"* and the *"distant"* represents no harm for one. Without this distinction we would not even be capable of organizing our acts of everyday life and of maintaining our capability of acting. (The discussion of the problem resembles, formally, the proposals by the economist Schoeller, *"The Management of Time",* who restores the capability of working by means of producing a subjective order of preferences among the problems to be dealt with; cf. E.24).

5. The example of acting in solidarity serves as a signal with an amplifying or systemic effect: A decision to act conscientiously in solidarity outside of one's own "close" domain is more than a breaking out of lethargy. It is a matter, even if only in the form of an exemplification, of conscious

resistance and of the capability of acting while facing a socially damaging or socially harmful structural development (degeneration). It expresses the consciousness of an image of Man and of society, and the *expectancy* that a *reinforcing or even systemic effect* may result from such a signal, for example, by means of mass media and political organization. See B.12D; A.21.

4. COOPERATION IN HUMANITARIAN ORGANIZATIONS AS AN ACT OF CONSCIENCE

Voluntary cooperation in humanitarian organizations is a proposal to reduce the arbitrariness of the *individual* selection of social problems which might require conscience. People with different professional capabilities, and more humanitarian, or more human rights or country-specific interests can be joined together in a plurality of different help and support organizations. These social human rights and help organizations form, so to speak, an *"externalized conscience": Thus, statistically distributed and on a self-regulating basis,* very different problems can be handled at the same time by means of differential interests and the division of labor of the people cooperating. *Exemplification and arbitrary care are thus relativized.*

5. TOWARDS LEARNING THE CONSCIENTIOUS DECISION

A "naive ethics" as a basis for conscientious decision-making (according to F.1) can easily be learned. Studying certain cases of how to make conscientious decisions paves the way for acquiring the capability of acting in similar cases in terms of cognitive psychology and neurobiology. The *cases experienced are points of reference;* they are focal or *prototypical* (in the sense of E. Rosch). *New cases are compared to them.* The cases are to be assumed as being structurally marked and analyzed into components. The comparison of components is thus made easier.

5.1 STRUCTURAL CHARACTERIZATION OF CONSCIENTIOUS DECISIONS

Conscientious decisions can be made or experienced by oneself; they can also become known second-hand.

1. Basic consideration: For instance, the following items are part of the structural point F.2 "Acting as a social obligation (according to conscience)":

a) Simply not to perform active negative actions, i.e., the explicitly active damaging of a second or third person might not be sufficient as a conscientious decision.

b) The passive withholding of information, of solidarity, and of warning (to remain silent, to keep out, to continue) can offend against one's conscience, i.e., against legal or ethical norms.

2. Structural characterizations: A structural characterization of the focal points of reference could be detailed as follows:

(1) Omission: Neither acting, intervening, warning, nor securing individually, officially or socially.

(2) Active Action: Provoking; pretending safety; pretending doing as if; lying; slandering; threatening; harming someone legally, physically, and mentally.

(3) Affective dispositions: Hatred, malevolence, vindictiveness, and the like, i.e., the permanent disposition to maltreat someone.

(4) Social consciousness as an attitude towards the destiny of the other person and as the consciousness of intervention (cf. F.2(4)): This concerns the level of giving reasons for action.

3. State organized anti-democratic patterns of behavior: This includes lying and mobbing as sanctioned officially or by the state, practices of exclusion, power exercised without control, and the suspending of fundamental rights. Moreover, the denial to point out any possible legal means of redress, bribery, and corruption of jurisdiction.

4. The extreme case: What should be done in the face of threatening reprisals as liquidation or torture? The state of torture enforces the organization of resistance. The historical point of reference: The "Résistance" (France), the "Homefront" (Norway), etc., historical cases of resistance against German national socialist terror and tyranny from which one has to *learn in exemplary form*.

5.2 PRAGMATIC PRINCIPLE FOR LEARNING THE CONSCIENTIOUS DECISION / LEARNING PROBLEMS

1. The substitution probe[37]*:* The *pragmatic principle* of learning conscientious decision-making could read: *Make a probe of substitution in which you take the place of the victim or of the person concerned.* Would you like to be treated the same way? Namely, we introduce the viewpoint of ab-

[37] After publishing the German version, I read John Mackie, "Ethics", Penguin Books, London 1990 (first published in 1977). Mackie writes on the universalization of moral judgements and refers to the same idea, i.e., "The second stage of universalization: putting oneself in the other person's place" (1990:90-92).

stract reciprocity as a pragmatic principle. Even for that, episodic cases as points of reference may exist: cases of conscientious decision on the part of another person in critical situations which one has experienced oneself. The ethical criteria of generalization ((F.1(3)) can make insight easier on how to make one's own decision.

2. Special learning problems are:

(1) Learning resistance against *group pressure* or, in more general terms, against normative pressure (cf. D.19-21).

(2) Learning resistance in the face of *threatening disadvantages,* especially the reaction to blackmail.

(3) Learning the deliberation between tranquility and harmony vs. resistance (and between legitimacy and objectivity vs. know-all).

One may recall the "rule of conflict resolution" in F.1(5) and the arguments in D.13, 17, 18.

3. On the question of "existential radicality (of decision)": In D.16(1), the concept of "inner freedom" is explicated as "consciousness of one's own independent decision and one's own firm intention to follow a reciprocal norm, even under the condition of resistance to group pressure or normative pressure, or to outer coercion, or rather in contrast to it". This kind of determination (firm intention) is probably required for learning conscientious decision-making. According to D.16(2/3), both one's own identity as well as one's own consciousness of social association and of legality is taken into consideration within this context of consciousness. Experience of determination (firm intention) pave the way for actual behavior in new cases of decision-making. See the ideas in F.3(5).

6. ON THE NEUROBIOLOGY OF CONSCIENCE: AN ESSAY IN REDUCTION

6.1 THE CONSCIENCE AS A COMPARATOR (SUBICULUM)

1. Neurobiological starting point: The starting point is the interpretation of conscience as a comparator of actual situations or intentions of acting with ethical criteria (norms). The following considerations integrate the ideas of modeling the limbic system presented by Sokolov, Smythies, Vinogradova, and especially Gray (partially according to Wieser):

"...the hippocampus has been viewed as... a comparator (Smythies 1966; Gray's (1982) septo-hippocampal system): the hippocampus filters and increases punishing, frustrating and new stimuli. The comparator is the subiculum; the entorhinal cortex projects the 'normal value' to the subiculum; and the 'effective value' is elaborated in the lamellar loop [of the hippo-

campus]. A ‘mismatch’ in the subiculum activates inhibitory hippocampal forces...” (H. G. Wieser 1992/summary). See F.6.4 [Neurobiological data appendix].

2. The subiculum is the comparator of norm and of situative intention of action: The Papez arc interconnects this comparator with the “monitor for attention and problem resolution”, i.e., the cingulate cortex, following Posner’s model. In terms of ethical interpretation, the *subiculum* is the *central component of conscience*, with the *cingulate cortex as a decision-maker* or as an active component (anterior cingulate cortex: executive component; posterior cingulate cortex: evaluative component). See C.2.2.2 (3) and D.0.2 (7) [Neurobiology of free will: the sketch of a solution consists in storing, among other things, normative criteria *within the buffer*, i.e., in the central processor or, rather, temporarily in the working memory]; C.4B/note 11.

6.2 “NORMATIVE”, “INTENDED” AND “SITUATIVE” IN TERMS OF NEUROBIOLOGY

1. Starting point: Situative or episodic experience, intentions of actions, schemata of actions and their results, and also ethical norms, are neuronally encoded. The information-processing of norm and intention of action requires a situative comparison, as well as decision-making and acting.

2. “Normal value” and norm: The entorhinal cortex (area 28) and the cingulate cortex seem to produce the *“normal or standard value”* (the prototypical schema of action). This can be equivalent to a routine or custom (habit) as well as to the prescription of an action (norm). Specifically, after some training the *distinction* is available. According to F.6.4, situative information, too, is relayed via area 28.

3. Functional localities: Starting from area 28 (with the still unclear role of medial vs. lateral perforant tract vs. temporo-ammonic bundle) *“normative” is projected onto “situative” (or vice versa) in the hippocampus proper,* in which locality details are elaborated differentially. The result is (a) fed-back to the subiculum (probably via Schaffer collaterals and ammono-subicular tract) and is (b) fed-forward in the Papez arc to the cingulate cortex. There, in my opinion, the decisions take place together with a *translation into acting (via amygdala and nucleus accumbens)*. Information on plans of action is relayed from the prefrontal cortex to the cingulate cortex and to area 28 (according to Gray 1993:1166/Fig.77.1; similar model in Goldman-Rakic). Components of the septum synchronize the components of comparison and of decision-making (following Vinogradova’s hypotheses 1995 / 45:523ff.).

4. Motivating function: The following neurobiological and motivational psychological arguments characterize the *motivating function of a norm and the norm processing locality:*

(1) The *operational definition of a norm* (obeying leads to reward; ignoring leads to punishment) underlies the functional operation of the amygdala and the nucleus accumbens: The *amygdala* is interpreted as being a *memory for reward and punishment* (according to Gaffan 1992; Rolls in: Aggleton 1992:150); the *nucleus accumbens* is interpreted, in terms of content and cognition as well as of endocrinology, *as being a translator of motivation (reward, punishment) into action* by the mediation of the differentiating quantity of the hormone dopamine. See C.2.3 [2].

(2) "The hippocampus filters and reinforces punishment and frustration..." (Wieser 1992; see above).

(3) The hypothetical case of experiencing stealing as rewarding would be, for example, reducible by means of comparison with recalled knowledge or with anticipating the risk of sanctions.

5. Derivability of decisions: Normative components and ethical decisions can be derived cognitively as implications, going beyond the motivational factor just discussed. Neurobiological arguments in support of that are:

(1) Normative criteria and prototypical instructions to actions *are called upon and are temporarily stored in the buffer*, i.e., in the central processor or, rather, in the working-memory (cf. D.0.2(7); C.2.2.2[2]/[3]).

(2) Forming implications according to F.1(1(4)): Sequences or, rather, connections are formed, for example, by means of the hippocampal autoassociation matrix in CA3 according to Rolls. According to Rolls (1990; Rolls & Treves 1998:98, 134), the hippocampus can *complete* even cognitive *parts or fragments* once learned; i.e., deductive implications or at least inductive inferences should be allowed to be formed by means of this mechanism, even on the basis of scenic information.

(3) Social (comparison): Conscientious decision can be derived in principle from the egocentric vs. the allocentric planning of action. Also in this case, implications are formed and are deliberated as consequences of action, and namely from the other person's point of view in comparison with one's own point of view. See below F.6.3(2) (ref. to Proust).

6.3 EGOCENTRICS VS. ALLOCENTRICS AS NEURONALLY CODED FEATURES

1. Egocentric vs. allocentric neurons: Social space which is also the space of action, of thinking and of working is neuronally represented (cf. B.2). The discovery of the distinction between egocentric (with reference

to the ego) and allocentric neurons, which refer to an interacting partner or to spatiality, is a neurobiological breakthrough. Points of reference, axes, and contexts have been documented in neurobiological experiments.

2. Reciprocity: The organization of egocentric vs. allocentric neurons in accordance with the feature of reciprocity would have to be learned *additionally*. This characteristic might have been captured in Gallese's experimental observations on "mirror-neurons" in the ventral premotor area of the monkey (corresponds to human speech-motor area 44).

In considering Gallese's "mirror-neurons", I do tend to accept *provisionally* the coded congruence *("shared features")* between factually observed ('allocentric') and self-executed ('egocentric') actions as possibly implying *'reciprocity'* ("mutual understanding requires...", Gallese 2000: 329). In terms of practical learning, one can think about the "substitution probe" as outlined in F.5.2 as the basic rule for learning conscientious decisions. See Gallese's notes on "subjectivity" and "intersubjectivity" in C.3.1(4) and C.3.2(4); J. Proust, "Awareness of Agency: Three Levels of Analysis" (in: Th. Metzinger 2000:315ff.) whom I do not follow in every point.

6.4 DATA APPENDIX FOR SUBICULAR FIELDS, ENTORHINAL CORTEX AND HIPPOCAMPUS

Subiculum: Cf. C.2.2.2(2/3/note 4-5): reciprocal connections between area 28 **[excitatory information; schemata?]** and the subiculum; reciprocal connections between area 48 **[focal information]** and the subiculum; reciprocal connections between the subiculum and the basolateral amygdala (Swanson 1978:35; O'Mara et al 2001:136) **[motivational information]**; and subicular connections to the nucleus accumbens **[translation into action].** See Gray 1995 and nd. With these four components, ***consciousness (incl. conscience) is hypothetically modeled and explained in terms of an anatomical mechanism for the formation and translation of intentions of actions into acting, on the basis of regulating feedback*** (cf. Gray 1995: 671 [Intentional]). According to O'Mara et al (2000:447) the subiculum receives and integrates **positional** information from the hippocampus, **directional** from area 48, **sensory** from area 28 and from other sensory areas, **remembered and contextual** from the hippocampus and from the prefrontal cortex. O'Mara et al (2001:149) emphasize the **formation, comparison and integration of episodic locational maps** as a function of the subiculum, area 28 and the hippocampus, and quote Sharp (1999): "...subicular place cells appear to transfer a single, universal locational firing pattern from one environment to the next... subicular / entorhinal spatial representation 'assist[s] the hippocampal layer to rapidly form new environment and context specific 'maps' for each new environment / temporal context ('episode') the animal experiences'". Gray (1995:662): "...the heart of the comparator function is attributed to the subicular area. This is postulated (1) to receive elaborated descriptions of the perceptual world from the entorhinal cortex, itself the recipient of input from all cortical sensory association areas; (2) to receive predictions from, and to initiate the generation of the next prediction in, the Papez circuit (i.e., the circuit from the subiculum to the mammillary bodies, the anteroventral thalamus, the cingulate cortex and back to the subiculum); and (3) to interface with motor programming systems... so either to bring them to a halt or to permit them to continue".– Moments of comparison take approx. 80-160 ms according to Gray (1995:662; cf. the

arguments in Gray nd/1.4-1.5: t_1 [100-200 ms] = synchronization, 'binding of features'; t_2 [100-200 ms] = comparison of the result with expected result leads to consciousness.).

On the cognitive functions (of the limbic system): The monoaminergic system (noradrenergic fibers from locus caeruleus, serotonergic ones from median nucleus of Raphe) puts the whole system on alarm. Dangers or threats being absent, the system can function in terms of cognition and attention.

Presubiculum and parasubiculum, area 28 (entorhinal cortex) and hippocampus: The *presubiculum* receives information among other areas from the cingulate cortex, from the dorsal and ventral subiculum, from the claustrum, from area 7, area 48, from the laterodorsal thalamus (reciprocal connections) [Witter et al 1989:185ff., 196, 218f.: especially, foveal and oculomotor reflex information] = **focal** information. This information can reach the hippocampus via L. (= Lamina) III of area 28 by passing through the temporo-ammonic tract. The *parasubiculum* receives information, e.g., from the dorsal and ventral subiculum, from the claustrum, from the baso-lateral amygdala [motivational information, Swanson 1978:35; Witter et al 1989:205: basal and lateral amygdala in monkey] = **motivational and goal-directed** information. This information can reach the hippocampus via L.II (horizontal transversal cells; recipient of neocortical information: Witter et al 1989:190ff., Braak & Braak 1992:14, 27/Fig.15; back-projections to neocortex from L. IV) of area 28 by passing through the perforant tract or the temporo-ammonic tract.

Functions of the hippocampus: See C.2.2.2(2) 'HIPPOCAMPUS' ("new" vs. "familiar"; "relevance" (of information) in comparison). The function considered here is a bit more specialized (intention of an action = new? vs. norm = familiar?; or: new vs. familiar aspects in both of them?). "...hippocampus is necessary for normal associations to be formed between focal stimulus events and the context in which they occur" (Gray 1995:670). "All understandable novelty exists within a relatively stable context that is not novel" (Baars in Gray 1995:669). Generally, a great variety of types of memory and of temporal forms of storage is to be postulated for the hippocampus; cf. H. Eichenbaum & T. Otto & N.J. Cohen (1994 / 17:449ff.), Vinogradova 1975, Gray & Rawlins 1986.

"Finally, afferents from the prefrontal cortex constitute a likely route by which, in Man, cortical language systems can influence hippocampal processing" (Gray 1995:669).

7. FORMAL DATA APPENDIX FOR BUNGE'S SYSTEM OF VALUES AND MORALS

In terms of an alternative to the ideas outlined in this chapter, Bunge presents a very formal and systematic treatment of values, morals, ethics and social philosophy in his "Treatise on Basic Philosophy, Vol.VIII: Ethics: The Good and the Right". Introducing the reader to his important book requires the attempt to present a condensed excerpt which captures the systematic spirit.

0. On good social policy: According to Bunge (1989/VIII:341), "a *good social policy* is a global (or systemic) and long-term policy aiming at increasing social welfare, and designed with the help of the best available relevant knowledge, as well as with the participation of the people likely to be affected by its implementation." And (p.342): "A *good social plan* is one designed to implement, in a participatory and technically adequate manner, some aspect(s) of a good social policy." The major *basic principle (norm)* is "enjoy life and help others to enjoy life". A major political goal is promoting "the *survival of humankind*" (incl. environmental and social aspects, e.g. population growth).

1. On morals *(Bunge 1989:95ff):* "No individual is [exclusively] **self-reliant**" (p.95). "The ultimate source of morals are **needs and wants**" (p.95). A **basic moral right** (of person *x* to object *z*) contributes to the **well-being** of *x* (in terms of basic needs, i.e. survival and health).

A **secondary moral right** (to *z*) contributes to the **reasonable happiness** (in terms of covering legitimate wants of *x*). A **basic moral duty** (of *w* to do *z* for *x*) **helps** *x* to exercise her primary right (to object *z*). A **secondary moral duty** (of person *w* to do *z* for *x*) **helps** person *x* to exercise her secondary right (to object *z*).

Theorem 4.2 (p.103): "**Helping** implies being helped and conversely."

2. Some basic norms according to Bunge's system (1989):

Norm 2.1 (p.48): "Long-term well-being and, a fortiori, reasonable happiness calls for the following ranking: Meeting primary needs (survival) ought to precede meeting secondary needs (health), which in turn should precede meeting legitimate wants, which ought to dominate the satisfaction of fancies."

Norm 4.1 (p.97/98): "If *x* is a human being in society *y*, and *z* is a thing or process in or out of *x*, then

(i) *x* has a *basic moral right* to *z* in *y* if and only if *z* contributes to the well-being of *x* without hindering anyone else in *y* from attaining or keeping items of the same kind as *z*;

(ii) *x* has a *secondary moral right* to *z* if and only if *z* contributes to the reasonable happiness of *x* without interfering with the exercise of the primary rights of anyone else in *y*."

This norm is supplemented by a *norm of duty* 4.2 (p.98).

Norm 4.3 (p.99): "All of the basic moral rights and duties are inalienable except for trade-offs contracted between conscious and consenting adults under the supervision of a third party capable of having the contract observed." The idea is to prevent damage to one of the contract-partners or to third persons not directly involved.

Norm 4.4 (p.100): "Morality overrides the law of the land."

Norm 4.5 (p.101): "(i) Primary rights take precedence over secondary rights. (ii) Primary duties take precedence over secondary duties. (iii) Primary duties take precedence over secondary rights. (iv) An individual faced with a conflict between a right and a duty is morally free to choose either, subject only to condition (iii)."

Norm 4.6 (p.104): "Enjoy life and help [others to] live."

Norm 4.7 (p.105): "Seek the survival of humankind."

Norm 4.8 (p.110): "All moral agents are accountable for those of their actions and failures to act that affect others." A moral agent knows right from wrong, chooses and acts.

Norm 6.2 (p.182): "(i) All human beings have the same rights to use the natural, economic and cultural resources of their society as they see fit and as long as they respect the same rights of others. (ii) All human beings have the duty to do their best to take care of themselves and to contribute to the well-being of their fellow humans as well as to pursue the survival and advancement of humankind. (iii) The sole inequalities justified in the distribution of goods and services are those which are to the benefit of all..."

Norm 10.4 (p.332): "Goals, means and plans should be under constant technical and ethical scrutiny, which involves checking whether the goals are still worth pursuing, and the plans continue to be efficient, and altering either if they are not."

Norm 11.1 (p.367): "The one and only morally legitimate function of the economy is to help people meet their basic needs and fulfill their legitimate aspirations."

Definition 11.1 (p.372): "A society is *internally just* $=_{df}$ every member of the society (i) receives what she requires to meet her basic needs; (ii) can earn, by doing socially useful work, what she requires to satisfy her legitimate aspirations; (iii) fulfils the obligations assigned her by her family, workplace, and social circle(s) – assignments which, in the case of adults, are made by mutual agreement; (iv) is free to satisfy her legitimate aspirations and to pursue those inclinations that are not antisocial; (v) is free to work for points (i) to (iv) above, by herself or in association with others." According to "(iii) social justice involves democracy in the workplace."

See Karl-Dieter Opp, “Soziologie und soziale Praxis. Zur Anwendung und Anwendbarkeit der Soziologie für die Lösung praktischer Probleme” (Ms. Hamburg 1972), on the discussion of norms in terms of their empirical consequences. Statements of facts and evaluations should be kept apart as sharply as possible.

References: Psychology of Education: 150. *General:* 76.; 19.; 179.; 29.; 103. *F.1:* 1.; 66.; 29 *Law studies:* e.g.,. V. Epping, “Grundrechte”, Heidelberg/Berlin 2004: Springer. *F.5:* 118.; 29.; 103. *F.6.1:* 64.; 65.; 66.; 67.; 173.; 171.; 114.; 115.; 11.; *F.6.2:* 65.; 164.; 62.; 50.; 5.; 87. *F.6.3:* 130.; 52.

G. ON THE PHILOSOPHY OF SELF-DETERMINED DEATH AND SENSE OF SURVIVAL

0. AN OVERVIEW

As a basic argument of the philosophy of self-determined death, the proposition of *self-determined death as a right of self-determination* is introduced against a proposition of *obligation to suffering* (1.). The *sense of survival* is characterized by two components: As a first component, the *concepts* of conditions of living, will of life, and desire for survival are introduced in a short form (2.). As a second component, the *designs* of "dying for dictatorial megalomania" and the "disposition to resistance for freedom, identity and ability of social association" are contrasted within the dimension "image of society and sense of reality": the second design implies the idea of *overcoming suicide* by means of a *fight* or *resistance* (3.). Questions of reasoning ability and of resisting are touched on briefly (4). Some philosophical *reasons* for self-determined death are outlined, for example, chronic pain, as with cancer (5.). Some *reflections* concerning the decision for self-determined death include: It is prohibited to cause innocent people's death (6.); consciousness and reflective thought are desirable (7.); a physician as a counselor is recommended (8.). The *refusal* of human rights and fundamental social functions contributes in justifying the philosophy of self-determined death; and, conversely, the idea of preventing hopelessness contributes in justifying human rights and the functions of the social state (9.).

1. SELF-DETERMINED DEATH AS A RIGHT OF SELF-DETERMINATION

The philosophy of self-determined death is based upon the theoretical conception of *self-determination or free will* to be able to terminate one's suffering personally.

The *duty* of the political, social and legal systems, but especially of *physicians* and the medical system to conserve, to protect or to enable human life remains undisputed. This makes sense in order to be able to *distinguish murder,* i.e., arbitrary killing by another person, *from self-determined death.* (Only cases like *voluntary abortion [in contrast to coercion or enforcement to give birth], apallic syndrome and the rejection of forced feeding are exempt* from this claim against the medical system.)

The philosophy of individual, self-determined death has a long tradition; it is partially challenged by *religious* doubts, objections and *prohibitions* which can be characterized as *disputing someone's human dignity and self-determination, in the sense of an obligation to suffer.*

2. SENSE OF SURVIVAL I: CONDITIONS OF LIFE, WILL OF LIFE, DESIRE FOR SURVIVAL

"Sense of survival" can be understood more actively *as a sense for survival* in terms of searching or problem solving, or more discerning or interpreting *as a sense in survival.* "Sense of survival" is characterized by two components: (a) by the concepts of conditions of life, will of life, desire for survival; and (b) by regarding one's society as a more or less coherent (cf. D.24) or degenerated form of life, and by considering the possible idea of a resistance movement.

1. Conditions of life explicated: The possible concept of the conditions of life as seen from the individual perspective could comprise the following criteria:

(a) Holding a *future* as a perspective, as a program, as a plan, or as an economical existence, as a course of development, as a perceivable and conceivable coherence, as a producible *context of meaning,* or as an ability of experience, enjoyment or achievement. This probably includes a minimum amount of self-determination.

(b) The *congruence with one's self-image* and with the viewpoint of *self-esteem,* the conservation of an individual identity and integrity.

(c) The *sense of resistance, deprivations, suffering.*

(d) The concomitant feeling of actual or expected joy (even in case of temporary sickness or misfortune) as normal; correspondingly, the *absence of excessive, chronic pain.*

(e) The possibility of *social participation* and of giving and receiving social solidarity; living together in freedom and (social) consciousness.

The concept of conditions of life *couples to identity* according to (b). See E.20 [Identity as a principle of survival in self-organizational terms]. A *"sense of survival"* is co-determined by the "maintenance of identity".

2. Will of life and desire for survival explicated: The possible concepts of will of life and of desire for survival could connect to the concept of conditions of life.

"Will of life" is self-evident, *automatized and regulated in terms of the autonomic nervous system.* It can be made conscious in the sense of congruence with the features of the concept of "conditions of life" explicated

above. In cognitive and vegetative terms, "will of life" can be *adjusted to* a possible *reduction* of the conditions of life.

"Desire for survival" is adjusted to *fight* or to a *strong reduction* of conditions of life, e.g., in the sense of Items (b) and (c) [among other things, also pain], and can imply extreme conscious effort. It can be supported by the autonomic nervous system.

"Will of life" and "desire for survival" are coupled to the system of alarm and vigilance (cf. E.18).

3. SENSE OF SURVIVAL II: IMAGE OF SOCIETY AND SENSE OF REALITY

At this point the discussion of a sense of survival is continued. A very brief look is presented at the possible degeneration of one's society as a form of life which is not coherent and which no longer bestows meaningfulness, and at the idea of a resistance movement or of civil war.

1. Individual agony and meaninglessness: Dying for dictatorial megalomania, under the condition of uncomprehended veilings, useless suffering, or a mass of deaths, and the antisocial acts of political dilettanti and ideologues, may appear as being meaningless, identity-destructive and as a reason for self-determined death *if* individual participation in a resistance movement or *resistance* in the personal case *is no longer possible.*

2. (Collective) resistance: Readiness to join in with collective resistance can counteract individual despair and individually experienced terror, e.g. individualized suicide or organized liquidation as in the case of the Jews (as victims of hate and war against the religion of Judaism) under German Nazi rule. Resistance concerns its organization and, subordinated to it, military combat. An example is the French Résistance against Nazi terror. Another example is the formation of an alliance under oath and, correspondingly, the uprising against the Hapsburgian arbitrary rule of injustice with offenses against children in Switzerland (in accordance with Schiller's "Wilhelm Tell"): "...better death than living in slavery." This idea – *to prevent or overcome a possible individualized suicide or even a targeted and organized liquidation by a decision towards resistance and by readiness for combat* – is relative to a value and belief system which determines the "sense of survival". It focuses on the ideas of social association and the *ability of social association as a continuance of social solidarity,* social participation, legal protection, and individual safety. This includes individual political co-determination, validity of contract, informal agreement and trust, invulnerability of the sphere of body feelings and of reasonable

property, of *individualizable identity and existence.* The consequences may appear to be *paradoxical:* to counter *suicide* by a readiness to fight *to the death.* The possible paradox may remain as such[38].

3. Individual vs. collective suffering: I have introduced a difference between "individual suffering" and "collective suffering (misery, terror, suppression)" which is caused by tyranny. The alternative to the acceptance of collective suffering is the organization of collective resistance, i.e., civil disobedience, rebellion, and direct civil war. Solitude, in contrast to conscious and organized collective self-defense, leads to different consequences of action. See B.12D(4) [Marginalization] and F.5.1(4) [Extreme case].

4. CAPABILITY OF REASONING AND OF RESISTANCE

1. Capability of reasoning: You can say that somebody who *opts* for self-determined death does not need to *justify* himself/herself or come up with a very complicated justification. However, it seems to be better to do so as such a reflection increases the degree of self-determination and consciousness in decision-making: *less coercion,* no rash action.

2. Capability of resistance: An *image of Man* which rejects meaningless, unnecessary suffering, unfreedom and cynicism, and puts up resistance against it as an alternative, may reach a *limit.* A fulfilled life and a natural death, in dignity, in peace and calm, are desirable, but *not always achievable* in the particular case. To fight is not meaningless, but *failed,* for example, in the case of torture.

5. REASONS FOR SELF-DETERMINED DEATH

Among existential reasons for self-determined death, we may find, for example, the following *situational viewpoints:*

1. Pain: i.e., incurable cancer (cf. the arguments in G.2(1c-d) and (1a)).

2. No future: because of suffering due to irreversible crime; or because of one's fault, misfortune, failure, i.e., speculation (cf. G.2(1a)).

3. Loss of dignity: This refers to one's own faulty behavior, i.e. extremely antisocial behavior, missing legality, missing civil courage in terms of social standards (cf. G.2(1b)).

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[38] Christian Bay ("Strategies of Political Emancipation", Notre Dame & London 1981:199, Univ. of Notre Dame Press) ties the issue to the theory of human needs and human rights: "I can't think of any human right more fundamental in terms of human need hierarchies than the right to decide for what cause, if any, one would choose to kill, or to die."

4. Identity: This can refer to one's possibly failed identity (in accordance with a normative self-image of what one should be). On the other hand, it can refer to the refusal to accept an enforced identity (e.g., the pogrom against heterosexuals, but historically against homosexuals, too, in Germany, or the use of drugs as a precondition for employment). In connection with pogroms and other state organized acts of terror we refer to G.2(1e): the confirmation that *social association (formation of a society)* and social participation *are excluded* in the particular case.

5. Political rule of force and tyranny: This refers to the termination of an existential orientation which *is determined by arbitrariness* (falsification, lies, deception, dependency, submission), especially in the domain of perception, thought, knowledge, and sexuality, but also in social action in general: when the *fight is in vain.*

6. ON THE ETHICS OF SELF-DETERMINED DEATH

If one takes the decision to commit suicide, one should do so *alone* and *should not let innocent people die, too:* Second or third persons not concerned are not to be endangered. Directly or indirectly involved second or third persons, one's family, for example, are to be considered in one's thoughts and decision-making. The responsibility for self-determined death rests with the planning and acting person.

7. EXISTENTIAL THOUGHTS ON THE DECISION OF SELF-DETERMINED DEATH

1. It is desirable to *plan* and to *act autonomously,* with the ability of independent decision-making.

2. Emotional unshakeability is desirable: goal-directed, thoughtful, conscious. There are techniques for producing that state (such as meditation), also reading pertinent classical texts.

3. Consciousness and reflection: i.e., a cognitive attitude towards self-determined death, considering and thinking through different aspects, even technical ones, is desirable.

4. A relaxed, perhaps even a serene mood is desirable: the *consciousness of being at one's end of life and its meaning,* e.g., as liberation, as a release, as a last act of free will or self-assertion, as an act of insight, or as a last action of resistance, depending upon the situation.

8. ON THE METHOD OF SELF-DETERMINED DEATH

A method of suicide, free of pain and anxiety, is recommended. A physician as a counselor is imperative. To act oneself alone and unaided when committing suicide is necessary in the face of the prevailing juridical interpretation, i.e., counseling and execution of action are to be carried out separately if possible. It would be desirable to show *respect* for the decision of the person decided. As a rule, the *method of self-determined death* will not be mastered, but will have to be *acquired.* Juridical coercion to be allowed to torment oneself slowly to death, without the right to having medically adequate counseling and instruction, appears to be inhuman and uncivilized.

9. SELF-DETERMINED DEATH, HUMAN RIGHTS AND SOCIAL FUNCTIONS

The right to self-determined death forms part of human rights.

Thoughts on the sense for survival and on the sense in survival do imply the system of society, as well (G.2-3). These reflections can also help to ground human rights (a) as part of the constitution and (b) as part of international politics in generally preventing intent. See G.5(4-5). The goal is to *prevent* social, political and, if possible, individual *hopelessness* and *futureless prospects. The negation of human rights can help to justify the philosophy of self-determined death.* This includes the refusal of the social state or basic social functions. This does not touch on the request of individual resistance or the individual search for meaning in one's life which is directed at the individual person.

Reference: 88.

H. CREATIVITY, FANTASY AND DEVELOPMENT OF PROBLEMS

0. AN OVERVIEW

I start out with the proposition: *Creativity is the ability* to form aesthetic structures oneself or, respectively, *to develop problems oneself* (1.). Ideas about *"stimulations"* for that follow in (2.): One's fantasy is stimulated by structures (2(0).). Namely, one's perceptive imagination and one's thought become more easily structured under the influence of such structures. If applicable, I start out from an already existing state of work or thought (2(1).). One can study existing structures (2(2).). Stimulations may include (2(3).): concepts (2.1), percepts (2.2); spaces with limits, structural kernels and interfaces of domains (2.3); programs of thought and action (2.4).

The concepts of *"structure"* and *"problem"* are *explicated* and exemplified (3.). In detail, this includes the characterization of the concept of structure formally as "units" and as "relations in between" (3.1). I distinguish between "natural" and "artificial structures". The action schemata of perception and discovery vs. invention and construction are assigned to this distinction. I distinguish: the discovery vs. (one's) formation of structures and the artifact or result (this also includes the solution to problems) (3.2). Serving as *examples* are: the construction of a painted picture (3.3); the construction of a poem (3.4). The concept of the *scientific problem* is characterized as a cognitive process in the sense of a *task description.* This includes the specification of a goal and of the starting point. The concepts of the development of a problem and of the search for it are assigned to the concept of the problem (3.5).

The development of both a [creative] structure or a [scientific] problem is based upon *features which produce coherence.* Therefore, we consider scientific problems and aesthetic structures together. "Coherence" is characterized in terms of the components of content, of their functionally well-ordered relations to each other and of mapping, an overview or outline in the sense of an informational guide (4.). As a factual example for the coherence of a scientific problem, "Alzheimer's disease and its causes" is discussed (4.1). Notes on creative processes as consciousness and work, and on the social functions of science and aesthetics close the chapter (5.).

1. CREATIVITY IS THE CAPABILITY OF DEVELOPING STRUCTURES OR PROBLEMS

Creativity and active fantasy are capabilities of developing one's structures and problems (also in the sense of tasks). The capabilities are processual ones. One speaks of 'composing' and of 'composition' as a cognitive action *(draft or plan of action)* and as a productive, i.e., motor-manually mediated action. This constitutes a basis for self-organization (E.31(5)).

With that, a *unity of discussion* of diverse domains becomes feasible, such as:

a) Fine arts: e.g. painting, sculpture, photography, etc.

b) Music: i.e., composition.

c) Poetry, creative writing, narration.

d) Leisure time behavior, shaping one's life [e.g., travel (exploration of forms of landscapes and ecological environments)].

e) Social behavior: social configurations (e.g. communicative exchange; "ambiente").

f) Sexuality: Tantra, Tao Yoga (energy level, composition, interaction; cf. Ch. I [Sexual practice]).

g) Science: projects; recognition, development of and solution to problems; programs or paradigms.

h) Philosophy: reflection or development of ideas; heuristics.

2. PREPARATORY CONSIDERATIONS: STIMULATIONS OF FANTASY

0. Stimulating fantasy: Fantasy can be built up and it can be stimulated. How to come up with *new ideas?* How to come up with *new structures* or compositions, or *how to create them?* In general, perception and thinking are stimulated by structures (configurations), contexts, systems, or details, especially colors, and questions. By means of that, both automatically structure themselves more easily. Stimulation means "activation".

1. Previous knowledge: A thematic state of work, experience, or knowledge in the sense of one's preparatory work and one's previous knowledge. "Good conceptual figures, configurations or structures" can generate further implications and associations as insights, even in different topical domains.

2. Study of existing structures: One studies existing *structures* as externalized (or *published*) artifacts (or as "materials", "data"): e.g., in drawings,

pictures; structures of melody and rhythm in music; poems of a metrical or a free structure; outline of arguments, graphical overviews, e.g. block diagrams; outlines of content. This activity can still be in a phase prior to the formation of a problem in a strict sense.

3. Specification in terms of content: Stimulations can consist in ideas and *concepts* (2.1), in *percepts* or in pictorial/visual imaginations (2.2), in fields or *spaces* which show certain dimensions of features, e.g. *semantic, geographical, social* or atmospheric spaces (2.3), in *programs of thought and action* (scientific projects, "paradigms", reviews) (2.4).

2.1 IDEAS AND CONCEPTS

Ideas and concepts are basic to the *process of (creative) organization or composition* in science ("theme", problem), in fine arts (subject matter, material, color (distribution)), and in music (e.g., "theme", "leitmotiv" or "expressive idea": love, freedom; cheerfulness; tension; fighting, etc.). In the domain of science fantasy, ideas can consist in naming a problem, in a connection (of separate domains), in a transfer from one pattern or from one structure to another. Ideas or concepts can be conceived of as an *activating or search schema,* and an "answer" or resonance in response as an *"emerging" idea* (keyword, "chunk") in the sense of cognitive psychology. The relational connections of the subject word or keyword are implicit and must be made explicit. This specification makes the production of new ideas and of systematic connections easier. It is part of the directed process of thought. The concept of "interaction" may serve as an example: Who interacts with whom, when, where, in which manner and to what purpose and in which situations? What do the actions consist of? Which larger context can they be assigned to? (cf. Aebli 1981/II:62ff.).

2.2 PERCEPTS AND PICTORIAL IMAGES

Percepts or pictorial images can have the following characteristics: It can concern scenarios or contexts; it can concern the distinction of "from the closeness" vs. "from the distance", thus corresponding to different (spatial) perceptive qualities. In detail it can concern the following scenarios or contexts:

a) Landscapes and vegetation (biotope), explored by means of travelling or hiking. Similarly, this holds true for fauna (the coral reef, for example).

b) Architecture in nature, explored by visits or pictorial images.

c) Arts and artifacts, composition, buildings, e.g., painting, music, architecture (inside and outside as well as in atmospheric terms), explored by visual examination, listening, and visits.

d) Minerals and fossils, explored by examination.

e) Geographical maps, plans, systems models and overviews, studied and comprehended as aids to orientation.

f) Human beings, social spaces (also in atmospheric terms), experienced or observed by participation.

g) (Horizons of) consciousness in cultural landscapes, gardens, on photographs, in documents (also facsimile editions), explored by perception and study.

h) Past (historical), present (experience of social problems, social association), future (sketches of planning; the comprehension of ecology and population dynamics), explored by study.

Fantasy becomes especially effective if the *stimulation in one domain of perception and the experiential access can be transferred to other domains of life, activity and fantasy.*

2.3 SEMANTIC, GEOGRAPHICAL, ATMOSPHERIC SPACES: LIMITS, STRUCTURAL KERNELS, INTERFACES

Stimulations which can originate in *semantic, geographical, atmospheric spaces* could, for example, consist in:

1. The experience of the limits of a space: Inferring the general framework, the delimitation of a structure, the configuration and functionality of a structure itself. In terms of cognitive science, we speak of a ‘frame’ or ‘schema’.

2. The experience of structural kernels or core structures: Structural kernels are compact sets of partial structures belonging together. They are comparable to “chunks” (compact abbreviations analogous to keywords) from which further structural elements can be inferred: further ideas and/or thoughts. The structural kernels, thus, have an often implicit configuration and produce a saturation (see below). This saturation is a resonance in terms of ideas or perceptions:

(1) Complexity and functional well-integratedness (elements which go together) are important. In operational terms: “nothing is missing”, “is not inappropriate” or “does not irritate” with regard to details, completeness, functionality, and succinctness (little redundancy, nothing unnecessary).

(2) Prototypicality: Patterns for similar structures. A prototype [of a set of cases or objects] comprises as a concretization for those features which are

the best fit in the domain of cases or objects under consideration. According to the theory of prototypes (E. Rosch), we are dealing with a *relational structure* (e.g., *"basic object", "point of reference"; "focal trait or dimension of traits"*), i.e. with an *optimized structure which orients.*

3. The experience of interfaces (or cross-connections) between two or more domains. An example could be a volcanic island (geographical and geophysical domain) and a reef (geographical and biotopical domain): the interface between land and water, between geography, geophysics, marine biology, biomagnetism, between human social space, cultural habits and space in which food is appropriated; or with regard to poetry: visualizations in poems (concepts, images) and their relation to paralinguistic structures (rhythms, "verses"). These are interconnected structural fields which *stimulate fantasy.*

An *example* which illustrates and integrates the conceptual distinctions in this paragraph H.2.3: "Interface" is, in this case, a fixed geographical lookout: on the one hand, the view of the mountain ridge with the steep summits of the high mountains in front of the observer, and on the other hand the distant view of a wide plain or a wide and long valley. "Limits" are the observer's field of vision or sight. A "structural kernel" can be the steep mountain cliff (massif and blockage) and expanse (overview).

2.4 PROGRAMS OF THOUGHT AND ACTION

Stimulations which arise from *programs of thought and action* are produced by topic and problem-oriented *reading,* and by the analysis (studies) of scientific literature, especially at the beginning when studying *review* articles, or when studying accomplishments of *standard:* Domains (fields of reality) and models of *explanation (incl. theory formation), complex structural contexts* (data, singular events or contexts of events, lawlike regularities, approaches of intervention for situational change), *concept formation, and sets of methods* (incl. experiments within research plans). Information on a certain field of reality is systematically acquired. The structure of problems becomes conscious, and "knowledge" gained from the literature reaches a saturation from which one's own questions, constructive planning and the elaboration of one's own work arise.

As examples, cf. the reviews "Alzheimer's Disease" and "Acute Phase Response" as a physiological model of inflammation (fever) (in: Encyclopedia of Human Biology, Vol. I:209ff. and I:25ff., respectively).

3. SYSTEMATICS: STRUCTURE AND PROBLEM

What could a transformation of stimulations look like? In the beginning there can be an artistic or a scientific *"structural idea"* which is conceived as a task. This can include the *(kernel of the) structure* which is to be created artificially or which can be discovered in nature, or a *sequence* in the case of temporal progression, for example, a *plot* (of a drama, of a text). The structural idea becomes *elaborated*.

3.1 CONCEPT OF STRUCTURE

In terms of preliminary comprehension, the concept of *structure* comprises the traits of the relative *complexity of interrelated parts and of functional completeness* (cf. H.2.3[2(1)]).

The mathematical concept of structure can be explicated in the following way : *Units* and *relations* which are held between the units. These units and relations can have certain properties (dimensions of traits, concretized traits). The relations can, for instance, consist in activities or interactions, functions or cause and effect relations. Within cybernetics, my concept of structure would correspond more closely to the concept of *system,* whereas the concept of structure is limited there to relations only (cf. G. Klaus 1969).

In cognitive science, the concept of structure as a representation – a pattern, a *"frame"* with *"terminals"* [concretizations] according to Minsky, a schema in its build-up and in its context of application – corresponds to the mathematical one to a large degree.

3.2 STRUCTURES IN NATURE VS. THOSE CREATED ARTIFICIALLY BY MAN

1. Natural vs. artificial structures: In general, structures in nature are not created by Man, with the exception of certain features of cultural landscapes, e.g. rice paddyfields and rice terraces. Such natural structures can stimulate perception, and they can be *discovered*. There are *other structures* which can be *formed* or *built up by Man.* The goal of such an action of forming and building is to create a structure as an *artifact* (e.g., a painting, a musical composition, a poem, an outline of an argument). The result of actions is the artifact. We distinguish between "striving for a goal" and "achieving it".

2. Structures and human processes of action [deepening]: With regard to structures *formed* by Man, we can distinguish between the processes of

invention and *construction*. Invention: in the sense of inferring or deriving a structure from a concept (from an idea, from a *"chunk"* as a search guide). Construction: in the sense of a description or a design of construction. A *natural structure* which is not created by Man can be *discovered, discerned, described and explained,* i.e., a *representation* can be created. The reality which is represented does not get created – at least, not in general, except when it is built artificially.

3. Summary: We have distinguished between the *discovery* of structures (e.g., in nature, in society, also in documents presented, etc.), the *invention* or the *formation or construction* of structures and the *result* of construction, the *artifact.*

3.3 EXAMPLE A: PICTURE (PAINTING)

A painting may serve as a structure constructed by Man. Instead of painting, graphical computer experiments are suggested, but not specified at this point.

1. Preliminary thoughts:

a) Concept(ual idea): "Dynamics / Creation". The idea consists of a *structure similar to a galaxis* (d), with geometrical co-occurring features ((c) and (d)): *The formation of geometrical objects, angles, and colored background resonance.*

b) Two axes: in this case, one vertically on top of the other horizontally (90° angle), with an inclination of 15° relative to the vertical line or alignment of the sheet of paper.

c) Objects: two triangles and two quadrangles.

d) Connection between the objects: a geometrical snail or a spiral. *Key element.*

e) Background: golden yellow (or black; in this case (h) is white; see below).

f) Quadrangles, inner parts: dark blue, outer parts: deep blue (for example, ultramarine).

g) Triangles, inner parts: crimson; outer parts: brick-red.

h) Snail: when intersecting with dark areas: white; otherwise: black.

2. Generalized structure (composition):

In the above example we have the following components:

a) Type of picture or painting (still life; landscape; nude; portrait; abstract or geometrical).

b) Concept (conceptual, visual idea). *Focal key element which integrates.*

c) Frame (format).

d) Compositional structure I: objects (central; accompanying).

e) Compositional structure II: relation of objects to each other (positional relation).

f) Contours: width; colors.

g) Colors: as areas; saturated.

h) Material: e.g., canvas (oil paints); cardboard (crayon; colored pencils etc.); paper (watercolors).

i) Technique: e.g., multi-level coat of paints; use of spatula; "negative technique": paint pressed through net; template, etc.; experimentally varied computer graphics on the basis of programming elements with printouts.

3. Some principles of structure formation: I mention some very basic aspects of structure in painting.

a) A structure can have *meaning*. Meaning is defined in terms of *contrast (sets of features* [is-A vs. is-B]), e.g. taste: sour – sweet – salty – bitter – metallic – alkaloid (– fruity, etc.); air/water: gaseous – fluid *or* hot – cold; bovine: bull – cow – calf = male (adult) – female (adult) – non-adult [cf. Lyons, "Theoretical Linguistics", Cambridge 1968]. The same holds true for *visual meaning.*

b) *The energy* of a structure is based on the *metaphor* of "electricity". Charge, tension, or voltage is exemplified as "potential", movement, direction, gradient, balance, focus in environment. It is defined as a *dynamic contrast* in spatial terms.

c) According to H.3.1, structure is defined in *system* terms of units, interrelations and, moreover, "environment".

d) Structure can be elaborated in terms of meaningful *inferences*. Meaningful inferences [of obvious, probable or covered features or events] can be based on logic or ontology: implications or chains of implications (transitivity / similarity / equivalence); cause-and-effect relations, transformations (state / state change; goal / action / result); completion.

e) *Priming* can generate structure. This holds true for the active formation of structure (the creative process) as well as for its descriptive interpretation. Priming gives the key to, or the direction of, structure formation.

3.4 EXAMPLE B

A further example of a constructed structure is the following poem[39].

1. Preliminary ideas:

a) A poem of love *(intention)* to an unknown lady *(addressee)* is presented.

[39] As another published example cf. Spender in: P.E. Vernon 1970:61-76 (first ed. 1952).

b) *Visual idea:* Bamboo seen against the sun (in a subtropical surrounding).

c) Determining the *meter (of the stanza):* the Japanese haiku. The number of syllables is important. Three lines are formed: 5 + 7 + 5 syllables.

d) Some *"key words"* form the verbal starting point: 'Schattenriss' ('silhouette'); 'Bambusstaude' ('a stand of bamboo stems'); 'verschmelzen' ('to fuse', 'to melt together', in the sense of sexual love). 'A stand of bamboo stems' is reminiscent of W. Gundert's German translation of the nô-play, "The ghost in the stand of banana trees [Der Geist in der Bananenstaude]", the contents of which need not play any further role here.

e) After an attempt to harmonize phrasings and syllable numbers the following three lines emerged as a result:

"In the morning light	*"Im Morgenlichte*	(5 syllables)
the silhouette of the stand	*der Schattenriss der Bambus-*	(7 syllables)
of bamboo stems melts"	*Staude sich verschmilzt"*	(5 syllables)

I opted for the following version because of the energetic structure (and for avoiding the break-up of the term 'Bambusstaude' ['stand of bamboo stems'] in German).

"In the silhouette	*"Im Schattenriss der*	(5 syllables)
of the bamboo stems, the sun	*Bambusstaude die Sonne*	(7 syllables)
is about to melt"	*sich verschmelzen will"*	(5 syllables)

2. Generalized structure (composition):

a) Visualizations are part of the conceptual idea or the concept itself. A larger thematic context as concept could be chosen ("nature/seasons of the year", for example). The visualization (the "visual idea") is, as a metaphor, the *comparison with the third:* (1) the poem in verbal terms; (2) the visual experience; (3) the intention (in this case: making love). In other poetic contexts, the component (3) could, for example, consist in becoming aware or conscious of a mood, a thought, an insight.

b) Rhythm or meter: In western European languages, one will probably opt, in most cases, for the iambus or trochee (even freely combined). One has to decide between free rhythm, formal meter and/or rhyme.

c) Expression, especially expression of feeling: The expression of thought, feeling, and/or attitude (e.g., becoming conscious, intention, etc.) is put into a corresponding relationship (or even equivalence relation) with the *material*, *perceptible,* or *sensuous world:* to nature, to objects, to the other human being and to ego. From that follows a resonance. You could

also argue the other way around: Starting from a materially perceptible world, feeling, intention, thoughts and the sequence of action are ordered.

d) "Key words" in the construction process: "Poetic words" constitute the "priming", i.e., they are *focal expressions guiding* the construction *process* of writing a poem, from the first verbal idea to the artifact itself, i.e., the completed poem. The key words which go together are part of the conceptual-semantic and associative condensation.

e) Resonance: If rhymes refer to comic situations and are intended to be used in daily life, resonance is limited to the moment and disappears immediately. "Reverberation" stays with qualitatively good lyrics. It is reproducible in sustained or imagined intention.

3.5 THE CONCEPT OF (SCIENTIFIC) PROBLEM

1. The concept of problem[40] *as distinguished from the concept of theme:* A *"theme"* refers to a domain of investigation. It does not give instructions on what to do and how to investigate this domain of investigation. The problem is typically characterized by questions.

2. Relation to cognitive processes: An operationalized *problem* consists ideally in a description of a task. Part of such a description of a task is the *specification of a goal*[41].

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[40] Aebli 1981/II:13-82 has an excellent outline of the *general* concept of problem; cf. A.16(4), [Plan; Abelson 1975]. Bunge 1967/I, Chapter "Problem", has an exquisite representation of scientific problem-solving. Bunge chooses as **[P1]** a *starting point,* "novelty (a new question or idea)" and conceptualizes the **[P2]** *phases of problem development,* 'problem (definition)', 'search', 'solution'. He distinguishes **[P3]** between *"problem"* (a) as a conceptual subject, (b) as an act of asking questions, (c) as an interrogative sentence.

Bunge lists **[P3.1]** *"elementary forms of problems"* (p. 173). Transformed (p. 196), they include: (1) What is it (object of reference)? (2) What qualities does it have (properties)? (3) Where is it localized? (4) When does / did it take place? (5) In what (parts) does it consist (composition)? (6) How are the parts interconnected (configuration)? (7) How much, etc. is it (quantity)? (8) Which ones are the *relevant* variables? (9) How are the relevant variables interconnected with each other? (10) Which ones are the determining factors (causality)? (11) How does it work (mechanism)? – [P2.1] in note 3 is assigned to [P2]. [P3.1] is assigned to [P3].

[41] *According to Bunge,* (1967/I:199f.) **[P2.1]** the *heuristics of the development of a problem* include, inter alia, the following steps (my analysis and summary):

(a) The clear formulation of the problem: Without precision, no (clear) questions; without (clear) questions, no (clear) answers.

(b) The identification of the constituents of the problem: One should clear the premises and the unknown variables: search for the critical variable(s). This includes logical or ontological presuppositions (No. 3 in Bunge, p. 199) the analysis of which can lead to the modification or to the disappearance of the problem. See here the thoughts in H.3.1 [Concept of structure or abbreviated system] and H.4 [Coherence of a problem].

3. Functions of a goal: The *functions* of specifying *a goal* or several goals include:

a) The derivability of an *expected* result or of a *supposed solution to a problem* (direction of the solution supposed).

b) Specification of the conditions under which a problem is solved.

c) Selection and control of further steps of actions in congruence with the goal.

4. Starting point: A problem includes the specification of the starting point or of the initial conditions, e.g.:

- A finding and its (disputed) interpretation.
- A model (an explanation, a framework of hypotheses), its capacity or limits of capacity (in relation to data, etc.).
- A complex situation, a text, a case (their relationship to other facts or contexts).

According to Aebli (1981/II:17), a problem consists typically of difficulties in acting or of anomalies in acquiring systematic knowledge. This can include *gaps*, *contradictions,* or *opaque complicatedness.* In addition, there may be *isolates.*

5. Steps of activity: A problem (a description of a task) includes the specification of steps of activity or of *methodical operations which lead* (from the starting point) *to the goal.* In detail, this can include the elicitation of data (by experiment, observation, interview, texts or documents available) and their analysis, as well as the development of a plan of work (cf. A.16(3)).

6. Problem and its development: The concept of problem development is assigned to the concept of the problem. A vastly underspecified description of a task is progressively specified until the steps of activity listed can finally be carried out directly. At least one can try to *anticipate,* at the

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(c) Simplification, decomposition, transformation of a problem: This includes, if possible, the simplification of data and hypothetical assumptions (No. 6 in Bunge, p. 199). This can, moreover, include the decomposition into smaller units and smaller operative steps (decomposition into manageable partial problems; No. 7 in Bunge, p. 200). A transformation of the problem into a homolog problem of the same or of a theoretically related field of research can be helpful (No. 10, No. 11 in Bunge, p. 200). See *as an example:* "Alzheimer's Disease" as "Acute Phase Reaction" according to H.2.4 and H.3.5(9).

(d) The search for similar problems already resolved: One should try to assign the problem considered to an existing class of problems (or else of fields of research). *As an example,* the "positive (=increasing) acute phase reactant" α-antichymotrypsin in Alzheimer's disease can be mentioned. This is a kind of antiplasmin (Bowman 1993:96/97). In the case of an endothelial injury, antiplasmin seals the leakages of blood vessels, i.e., prevents bleeding. In the latter case we are dealing with an established systemic model of physiology which is relevant for the explanation of the processes of Alzheimer's disease. See Silbernagl & Despopoulos 1991(4th ed.):76.

earliest point of time, a development of the problem in the sense of an *ordered sequence and to use it, furthermore, in planning.*

7. Problem and search: The concept of problem includes the concept of search or of search-scheme: (further) development of a problem and instructions of search, for example, *as questions,* are assigned to a problem in the sense of a description of a task. Search relates to indices, lists, and models (bibliographies, data or protocols, research results available, especially reviews, "model works" in the sense of standards). The concept of search implies the concept of goal. The latter is to be distinguished from the concept of stimulation (phase before goal-orientation established).

8. Example: Bunge gives an illuminating *example for the development of a problem:* the analysis of power (1967/I:193/194). The starting point in this example is a concept in the sense of H.2.1. The following is an abbreviated outline of Bunge's example:

(1) How is power described? (1.1) What cases of power are prototypical ones? (1.2) Which factors are relevant for power [resources?, work force?, technical level?, forces of suppression?, ideas?] (1.3) Which factors correlate with power [hierarchical organization?, privileges?, rights?, violence?, indoctrination?, corruption?]? (1.4) Where is the relation of power localized? [e.g., in individuals?, groups?, both?]? (2) How is power analyzed? (2.1) Does one start from a special domain of power (economic, political, ideological) or from a social vs. psychological aspect? (2.2) How is power defined (necessary, sufficient, observable characteristics)? (3) How is power interpreted? (3.1) What does the power relation look like in a partial system in balance? (3.2) How do power relations come into existence and how do they change [away from balance or towards balance]? (3.3) Which powers can change a balance of power, which ones can restitute a balance?

9. For deepening, cf. E.25 [Focus as a personal project] which contains a possible generalization of the concept of problem and of project with regard to the analysis of daily life. The reader can try to reconstruct the following examples of scientific and practical problems in the sense of this paragraph: F.6: Conscience as corresponding to neurobiological structures and functions (using F.1/2 and C.2.2, C.4(7-11).– I.7.2: The course or the creative composition of a heterosexual union as an electrophysiological and sexually psychological pattern which one can acquire and hold, in contrast to flattening habituation in the sense of electrophysiology (using C.3.2 (3) in theoretical terms and A.12c, A.13-15 in practical terms).– Following C.2.3(3) the reader is invited to study the clarification of the mechanism of cause and effect for (deficiency of) ATP (adenosine-tri-phosphate) in connection with Alzheimer's disease as presented in detail by Meier-Ruge & Bertoni-Freddari 1997 (In comparison with the task in H.2.4, it may be pointed out that the heat shock protein catalase [Meier-Ruge et al 1997: 237] behaves like a "negative acute phase reactant", i.e.. decreases [Encyclopedia of Human Biology, I:33]: This implies the automatism of chronic

inflammation and cell destruction under the condition of non-regenerability.).

4. THE COHERENCE OF SCIENTIFIC PROBLEMS AND CREATIVE STRUCTURES

The concept of structure or problem, and the concept of the development of a creative structure or a scientific problem are dealt with from the viewpoint of coherence *(conceptual coherence).* See E.14-16; D.24; C.2.2.1 (10), C.4E.

1. Explication of the concept of coherence: "Coherence" refers to the semantic-pragmatic level. Namely, *components* of the *development* of a scientific *problem* or of a creative *structure* are (more or less) integrated in terms of their conceptual meaning and their procedural aspects as a technique or method of development. Previous work and some of their details ("preliminary knowledge") are ordered in the sense of a known area of content according to the criteria of fertility, the prospect of results and systematics. See also A.16(5) [field of reality considered, relevant variables distinguished therein, fertile questions pertinently generated].

In detail, I propose the following *explication of "coherence" (of a problem or of a structure):*

> *"Coherence"* $=_{ex}$ *"Components of content" & "Their functionally well-ordered relations to each other" & "System aspect" & "Operative aspect".*

2. "Components of content": We think about an inventory of dimensions of features which belong to the elaboration of the problem or to the formation of a creative structure. For substantial features and dimensions cf. H.4.1, H.3.3/3.4 as *examples*.

3. "Functionally well-ordered relations":

(1) Features belonging together (e.g., with regard to level, units, contexts).

(2) Coherence of features.

(3) Relative well-integratedness and completeness (of the problem, of the composition): (a) no arbitrary selection by chance; (b) definiteness in the sense of circumscription (of the *problem:* e.g., the critical locality or range of validity; units, features, relations [as possible parts in model-building]; of the *artifact;* frame, format, configurative ensemble); (c) "frame" $=_{ex}$ "criteria of inclusion vs. exclusion", if necessary in connection with reflections on centrality and contrast.

(4) Centrality:

(a) in terms of scientific problem development: in building up an argument, in analyzing, and both of them in correspondence (relation) to the problem focus and to the field of reality;

(b) in terms of creative concepts or ideas, e.g., in painting: in sketches or in designs of artifacts (painting) in correspondence to the conceptual idea or to its optimization as configuration ("gestalt").

4. "Aspect of system" $=_{ex}$ "topographic mapping" or "overview" or the "sequential formation of results" or "outline" (i.e. a "cognitive guide as a sequential order"); "homeostasis" or "imbalance" (?) (for example, in the case of the human system when considering functions).

5. On the operative (pragmatic) aspects of problem coherence; The *operative development* of a problem or of a creative structure could, for example, include the development of methods (e.g., techniques of painting, composing, etc.) and plan of work. In accord with Aebli, I conceive this operative development as being a constructive build-up of schemata and as a reversal of schemata leveling.

4.1* EXAMPLE OF PROBLEM COHERENCE: ALZHEIMER'S DISEASE AND ITS CAUSES

* [This paragraph can be omitted.]

In the following paragraph, an attempt is made to order pertinent literature in exemplary and heuristic terms as "previous knowledge", i.e., as an individually relative, preliminary state of empirical thought and work. ***View points which could guide the analysis of Alzheimer's disease*** could, for example, include: contexts, models of cause and effect, possible system levels (e.g., neural vs. sanguinal-humoral; genetic vs. protein-enzymatic; ordered hierarchically in terms of critical localities; connective and information transferring; physiological dysfunctions or stressors; cognitive and behavioral deficiencies which in this case are not to be at the center of attention and which, therefore, are not to be pursued further; discriminatory features of similar configurations of diseases, e.g., Alzheimer's disease vs. Parkinson's disease, the variance of which is to be explained).

Initial causes like nutrition [Thiamin deficiency (thiamin = vitamin B1; in Alzheimer's disease and Parkinson's disease according to N. Calingasan & G. Gibson in: Br. Res. 1995 / 677:50); heavy metal toxification], environment [breathing, smog, level of heavy metals], communication [affective stressors such as hate], noise [continuous sound of whetting] and the like are in need of special consideration.

1. Components of content: "Components of content" include *(1) the critical localities:* intracellular (cell membrane, cytoskeleton) and extracellular components as well as blood vessels (vascular muscles). Moreover, "components of content" include *(2) nucleotids and (metallo)-proteins* (cf. C.2.3(3) [ATP deficiency], H.3.5(9) [catalase, heat shock protein]; this also includes (see below) APP (=amyloid precursor protein) and βA4-protein); *(3) brain areas* (cf. C.2.2.2(5), C.4(28) [Area 35 / short-term memory as a key area]) *and (4) processual phenomena* (cf. H.2.4; H.3.5, Note 3: (c) [Alzheimer's disease and "acute phase reaction"], (d) [Alzheimer's disease and "endogenous system of endothelial injury"]). The "components of content" could also include *(5) deficient quantities of hormones (nanomolar vs. micromolar quantities),* e.g. glutamate or adrenaline.

2. Functionally well-ordered relations: The physiological models *(1) "ATP deficiency (muscular rigor complex)", (2) "acute phase reaction", (3)"endogenous system of endothelial injury (blood vessels)" and (4) "heat shock"* are interpreted as models of *causal processes.* They are partially identical with the "components of content" classified as 1.(4) "processual phenomena".

With inflammation or fever - (2) "acute phase reaction" - APP (the reversible amyloid precursor protein) forms. The irreversible (not degradable) protein *"leitmotif"* in Alzheimer's disease, βA4, is formed from APP under the condition of heat shock which takes place, for example, after a shock (a sudden decrease of blood pressure) by means of the reperfusion of the arterioles. Heat shock leads to the formation of free oxygen radicals which attack mitochondrial DNA *("mutation"?)* and, thus, can strongly reduce the functions of the respiratory chain. The *(5) deficient quantities of neurotransmitters and hormones* which can also include ATP and zinc are caused by permanent excitation, for example, of the pyramidal cells, a further critical locality. [Zinc: cf. for example M.E. Percy: "Peripheral biological markers as confirmatory predictive tests for Alzheimer Disease and in Down Syndrome" (in: J.M. Berg & H. Kardinsky & A.J. Holland (Eds.), "Alzheimer Disease, Down Syndrome and their relationship", Oxford 1993: Oxford University Press)].

3. System aspect: Area 35 is interpreted as being a cognitive neurobiological *key to the system* [with the "permanent sound experiment" involving loss of Nissl substance as a physiological model of stress (following Kahle 1991:18/19)]. Area 35, as a short-term memory, would be especially strained by stress. An attempt is made to correlate cognitive-behavioral and neuroanatomical-biochemical characteristics with the outline of chronological development of Alzheimer's disease according to Braak & Braak. The prefrontal cortex representing a short term memory described by W. Schultz et al would need to be investigated as a further key area; this area is probably innervated by, and functionally dependent upon, the tract of the locus caeruleus [cf. C.2.2.1 (2 (1))].

4. Operative aspect: At the center of attention are, heuristically, the *diagnostic characteristics* (amyloids (APP), "paired helical filaments" (βA4)). Their *production at critical localities* may be *explained causally* by process models. The construction of a model of sequential and parallel processes on the basis of publications is striven for (cf. Meier-Ruge & Bertoni-Freddari 1997 and Braak & Braak 1992). The method of model building, if possible, and of forming causal chains, is applied. An example of a causal chain:

Ischemia = heat shock → ATP↓(↓↓) → Pk40 ^{erk} ↑(↑↑) → τ [abnormally phosphorylated] → PHF [= paired helical filaments = βA4].

Pk40 ^{erk} is a protein kinase, the production of which is normally suppressed by ATP. Tau (τ) is a cytoskeletonic protein (microtubuli associated factor). ↓(↓) = down-regulated, ↑(↑) = up-regulated (quantitatively variable).

5. THE SOCIAL FUNCTIONS OF FANTASY

The development of scientific problems and of creative structures is based upon: (1) *processes of consciousness,* and (2) *working processes.* We are dealing with designs and their elaboration, and with accomplishments. This type of work is based upon "thought" and consciousness (i.e., on focused attention).

1. Preliminary note on fantasy: A "fantasy" which presupposes or aims at pain and the destruction of another human being (e.g., by sadomasochism,

perversion, lies) is not creativity but destruction, inhumanity and crime. According to H.1(a,f,g) this holds especially true for sexual praxis, film making, and scientific research (e.g., callosectomy).

2. The social functions of scientific problem development and of the creative structure formation: They consist, among other things, of communication and publication (information, progress of knowledge, contribution to the capability of social survival), of formation of expression (increasing ability of expression) and in stimulation of fantasy, also in a transfer to domains which are different from arts or sciences in society.

3. Contribution of science: Science accomplishes a contribution to a *rational, conscious, and problem-oriented composition of daily life:* "comprehension of the still uncomprehended" personally as self-education, and institutionally as a goal of public education (school, university, mass media). This also includes the comprehension of other cultures and the increasing liberation from suppressing ideology and superstition (critical enlightenment). Science contributes to our worldview, i.e., to the image of nature, of society, of Man, and to our understanding of health (A.19(2), E.11(7)).

4. Political consulting: An important social function is rational *scientific political consulting* capable of prognoses as the basis of *controlling society* in terms of social engineering. This is to be seen in conjunction with an increasing humanization of the conditions of life in the society concerned, and with an increasing liberation from stress, poverty, and existential uncertainty of each member of that society. This means, in explicit terms, empirical problems of sciences include maintenance and the extension of the social state and the preservation of the capability of social association. This does not concern the national economy only, but a growing integrated system of sciences of nature, of the social, of the mental (or cognitive), and of application or intervention.

5. Functions of the fine arts: Fine Arts contribute to a structured, stylistically stimulating, pattern-forming organization of leisure time and daily life, and potentially to the development of new forms of social living.

6. Final note: With these hints, the consideration of social functions of fantasy has not yet been exhausted. This holds especially true for the potential contribution to comprehension, to reasonable orientation, to the ability of expression, and to the development of perception.

References: 129.; 96. *(in general and in contrast);* 128. *H.2.3:* 133. *H.3.1:* 91.; 109. *H.3.4:* 153; 142; 69. *H.3.5:* 27.; 4.; 20. *H.4:* 13.

I. NOTES OF CONCEPTUAL THINKING ON SEXUAL PRACTICE

We understand motor, sensory, and emotional sexual experiences by means of conceptual thinking, i.e. by means of conceptual distinctions. It is the goal to shape one's sexual practice heuristically and consciously, to deepen it, and to integrate it into life. These notes concern exclusively heterosexual practices which do not present any threats to health (cf. I.7.1(5); I.*References*, note 1).

0. PRELIMINARY REMARK

0.1 AN OVERVIEW

I start out with some behavioral principles which form the basis of the sexual union of both partners (0.2). Starting to make love (mental preparation, caressing, etc.) is outlined shortly as a sequence of phases (4.5(3)). An electromagnetic model which defines man and woman as a polarity and as a dipole serves as a theoretical starting point (1.1). Two components or, rather, states of a structural image are introduced: a sensor-motor motion image and a visuomotor or visuomagnetic energy image which is produced by means of looking mutually into one another's eyes during sexual union (1.2). From this, conceptual distinctions follow which are summarized clearly in three property matrices [Tables 1-3] (8.). In detail, this is the distinction between vaginal-deep vs. vaginal G-point at the entrance to the vagina behind the clitoris (2.1f, 2.2d). This leads to the development of the conceptual opposition between "close" vs. "(more) distant". To achieve this, the differential sensor-motor activity of the penis and the vagina, and the mutual looking distance of the eyes (approx. 30cm vs. >50cm) are combined with each other (3.1a/b; 8.1, Table 1). From this, the contrast between "passion (desire)" vs. "spirituality or, rather, contemplation (being or becoming aware or expectation)" is built up.

The central idea is sexual union as the development of a structure. For this, the following two components serve: Firstly, *'conscious experiencing' (= '(more) distant';* holding the visuomagnetic energy image; focal), and secondly, *'progression or course' (= 'close';* motion or arousal image; temporal). Cf. 4., 4.1, 4.2.. The basic concepts in *expressive behavior* (5.) are "contemplation, expectancy" vs. "desire, passion" (in detail 5.1 and 5.2), which serve both as behavioral components in direct sexual union.

Componential analyses of (1) motor and (2) sensory activity are presented in which I propose to *assign meaning* to sensory activity (e.g., "joy and desire semanticized" (3.2) and "active" vs. "passive" or more precisely "receptive" (3.3)).

Inter alia, the concept of sexual fulfillment is tentatively defined in formal terms (5.5c). I try to sketch the *integration of sexuality and of partnership* and life design in outline (6.). Sexuality and intimacy are understood as part of the *health system* of Man (7.1). The *repeatability* of sexual union is neurophysiologically – as far as I know, for the first time – defined as a *basis for building up a schema* ("no decay, no habituation over time") and thereby of building up a *permanent relationship*. This is in contrast to flattening habituation (7.2; cf. also 5.1, especially b). The criteria for building up a schema of sexual union are defined (7.2(2-7;8-12)).

Learned partial schemes are optimized and are reused prototypically. The reader is provisionally referred to E.25, especially (4(4)), which methodically details the formation of a focus. Concept formation is sytematically summarized in *property matrices* in 8.1/2 and further developed as *sequences and patterns of composition* in 8.3/4.

0.2 SOME BEHAVIORAL PRINCIPLES

a) Sexual exchange is based upon consent, on mutual agreement, never on one-sided seduction.

b) Sexual exchange is based upon reciprocity, i.e. on the equal rights of both intimate partners. They encounter each other in freedom.

c) Sexual exchange is based on perceiving the female partner or the male partner, respectively, and on an immediate reaction potential even in the sexual (motor) act. This implies the conservation of consciousness, of vigilance, of considerateness, and the complete absence of violence and aggression.

d) The persistent feelings are joy and pleasure, mutually, and the absence of sadism and masochism, of suffering, pain, humiliation, and submission (the necessary act of consciousness: One says "no" to inhumanity; cf. I.7.1(5)). Recognition or prestige as motives for a sexual relationship are not recommended.

e) At the center of attention are two individual spheres of body feeling of the individual intimate partners who try to develop and shape a shared intimate sphere. Desire is reciprocally directed towards this. Its precondition is "facilitation": Awareness of the components and mutual consent. This will hopefully exclude situations of "mental reservation" (i.e. "a feeling of but"; to fall into love, 70%; yes-and-no).

f) Sexual exchange aims at convergence: reciprocal saturation (in withholding ejaculation), reciprocal orgasm, the dynamic composition or organization of the sexual encounter, i.e., mutuality, the reciprocal release of tension or reaching a reciprocal, satisfying plateau of tension, or, more precisely energization.

g) Composing sexual praxis is also the development of personal taste and shared individualized style. Recommendation: Be careful in your form of expression and in your style.

h) Suggestion: As a male partner, try to satisfy your female partner first before you reach an orgasm.

1. AN ELECTROMAGNETIC (ANALOG) MODEL

1.1 SEXUAL PARTNERS AS POLARITY AND AS DIPOLE

Man behaves like a dipole which can function electromagnetically as a transmitter or a receiver.

a) Moreover, male and female form a magnetic polarity as (active) *sexual partners*: Two single dipoles are *coupled* communicatively with each other (cf. I.5.4a).

b) As *transmitters* they arouse each other and stimulate each other mutually.

c) As *receivers,* they are aroused and stimulated mutually.

d) This produces the *distinction* between *"active"* and "passive" / *"receptive"* (in terms of perspective and (alternate) phases).

1.2 SYSTEM OR FIELD ASPECT OF SEXUAL UNION

The sexual union of both partners creates, in my opinion, a closed magnetic field (cf. I.5.4).

Sexual union produces a *structural image* (of this union). The components of this structural image which are perceivable for each sexual partner correspond to two kinds of image:

a) In terms of *detail*, it corresponds to a motor-sensory arousal and motion image;

b) In terms of visuomotor and visually magnetizing *integration*, it corresponds to an energy image which represents an electromagnetic field mediated chemophysically and physiologically. Increasing build-up, the slight decrease and plateaulike maintenance of this electromagnetic field are at the center of attention when composing sexual union.

2. MOTOR COMPONENTS AND THEIR POSITIONAL INTEGRATION

Two positions of sexual union are *exemplified* and explicated.

2.1 "RESTING ON ONE'S ARMS AND HANDS"

The male partner is lying on all fours over his female partner, resting on his hands, without pressing her thorax. The upper and lower arm (including his elbow) form *one line*. The throat or thyroidea and larynx remain free and are *never pressed*. Components:

a) The male partner lies continually on all fours during the entire union. His upper and lower arm form a solid line.
b) The angle of inclination of the upper part of the body of the male partner is variable (flatter or steeper).
c) The motor movements of the penis alternate to the left vs. the right side.
d) Alternatively, the motor movement of the penis is medially centered.
e) The velocity of penis movement can change (fast or slow).
f) The movements of the penis are proximal (as seen from the opening of the vagina), i.e. stimulation of the G-point, vs. distal-deep in the vagina. The clitoris can be stimulated indirectly.
g) The male nipples are touched gently all the time by the female partner. See I.2.2b.
h) The partners press their thighs against each other. The muscles of the foramen sacrum, of the hip and of the buttocks are coordinated, and the pelvis is rhythmically moved at will.
i) The perineum is contracted as described by M. Chia.
j) Both partners look into each other's eyes or at the "third eye" (lower medial forehead) continually during union.

2.2 "SITTING ON THE MALE PARTNER"

The female partner is sitting on her male partner, who is more or less lying on the floor or ground or is sitting and leaning against a wall or something similar.

a) Both partners kiss each other: e.g. on lips, breast, neck, face, over vast parts of the body.

b) Both partners gently touch their nipples mutually (must not be painful or otherwise unagreeable). *Note:* The uninterrupted touching of the male nipples by the female partner in combination with the (uninterrupted) mutual looking into each other's eyes is a technique producing a persisting erection of the penis in sexual union.

c) Sitting mutually in front of each other: Both partners hug each other's neck, the upper part of the body, the hips.

d) The penis rests in the vagina. It pushes after a while laterally more to the right or to the left, for example, also by means of pelvic movements of the female partner. A "levitation" of the female partner and, correspondingly, the position of the penis in the G-point area of the vagina are possible. The clitoris can be stimulated directly manually. The perineum is contracted. See I.2.1h [Rhythmic movements of the pelvis].

e) The male and the female partner look directly into each other's eyes or at the "third eye" without interruption. Thus the magnetic field is built up and dynamized most effectively. The female partner can vary the mutual distance of the eyes by leaning downward and resting on her arms and hands (as described).

f) Sitting in front of each other mutually (i.e., the male partner leans against a wall): Union can be arranged as sexual-erotic meditation. Arousal is harmonized (and continues), mutually looking into each other's eyes: "aroused tranquility or aroused harmony".

3. ASSIGNING MEANING TO SENSORY ASPECTS: ANALYZING COMPONENTS

We build concepts by means of *forming contrasts within the sensory domain*, thereby laying the basis for assigning meaning to sensory modalities. Recall and perception can thus be deepened. The feeling can be increased by means of concept formation and by means of conscious naming.

3.1 "CLOSE" VS. "(MORE) DISTANT"

a) *"Close"* is prototypically viewed as being a mutual embrace of the male and female partners. "Close" is understood in terms of vision (see below, b) and in terms of touch. In terms of penis motor movements, this corresponds to "distally-deep" in the vagina (relative to the opening of the vagina). Kissing and caressing, but also passionate movements, are two distinguishable components of "close". Cf. I.4.5(4), I.8.3(2). The look is the "close look" (mutual distance between each other's eyes, approx. 30-35 cm).

b) *"(More) distant"* is prototypically looking mutually into each other's eyes during coitus and stimulating the G-point proximally to the opening of the vagina. The look is not the "close-up look", but a look slightly "more distant", from a distance of approx. 50 cm or more. Selective movements, especially of the female, and muscular contractive feeling of the vagina and of the penis by both partners pertain to it.

c) "(More) distant" seems to correspond electromagnetically to a *tonic level* or to *reaching a plateau phase*. The level of energy is held, the body or, rather, the orgasm is controlled. "Close" (in terms of looking and mutual skin contact, i.e. touch) corresponds to feeling movement (penis – vagina) and to heat production. The diversion of heat is accomplished by "(more) distant", i.e., reducing movements of the penis and by shifting its vaginal effect to the G-point (control of male orgasm). Heat is eventually diverted via the eyes and via the skin.

d) "Close" vs. "(More) distant" holds true especially for the position called 'Resting on one's arms (elbows) and hands' according to I.2.1, but is also possible with the position of "Sitting on" according to I.2.2. In the latter position, the movement of the female partner plays a special role.

3.2 "RECIPROCAL JOY AND PLEASURE" SEMANTICIZED

a) Mutual visual and skin sensory perception: Ecstasy is avoided. Consciousness and circumspection persist mutually. Joy is *visual (and skin) perception* (contemplation) *and expectancy* (cf. I.5.1 u. I.8.1/Table 1).

b) Enjoying / tasting: The joy or desire of the female partner is my own and/or increases my own. Joy is *enjoyment and tasting*. The joy of love is here compared to feasting and tasting: i.e., to *shared and mutual consumption and / or celebration*.

c) Exchange of energy: Energy is received mutually from each other, i.e., somatically felt, and / or mutually given to each other, i.e., somatically radiated. Energy is transferred or given by me, and I receive energy from my female partner. The exchange of energy is participation. Joy is the *exchange of energy and participation*.

d) Convergence: Joy as a shared (seen, silently addressed, communicated) consciousness, as a felt feedback, as synchrony: mutual penetration. Joy is *convergence*.

e) Communication (silently thought; build-up of a neural pattern; unnecessary talk is avoided): "You in me" (female point of view), "Me in you" (male point of view), "You holding me" (male point of view), "Me holding you vaginally" (female point of view), "You on top of me", "Me on top of

you". Further concept formation: "We together as a wave, as a field of motion, as presence and nothing else, as synergy, as shared energy", etc. Joy is *addressing*, *informing, or communicating and replying,* or answering.

f) Arousal: to hold and exchange arousal. The structural image of sexual union is partially an image of arousal which is emotionally joy, and desire, or pleasure. Joy is *arousal*.

g) Experiencing movement: The structural image of sexual union is partially an image of motion or movement. Joy is *movement or touch*, i.e. *activity*.

3.3 (LOCUS OF) CONTROL: "YOU ARE CONTROLLING" VS. "I AM CONTROLLING"

a) Enduring, overpowering, dominating: "(I) endure (you)", "(I) overpower (you)", "(I) dominate (you)" are always to be excluded. It would destroy composition.

b) Suspension of "active" vs. "passive" ("I, the active one; you, the passive one") by means of producing an electromagnetic field, implying the formation and vibration of structure: Harmonizing "active" vs. "passive" is accomplished, for instance, by arousing each other mutually (cf. I.1.1d) and by changing the focus of arousal dynamically (increasing arousal, decreasing it slightly, harmonizing it, releasing it in terms of mutual orgasm). The reflex of the consciousness thereof is necessary for relativizing "active" vs. "passive". One could try out a phase-dependent shift of focus (looking, duration in minutes): I perceive myself now as more passive, and now as more active, and I perceive my female partner (or male partner, respectively) correspondingly in contrast. Both partners may perceive themselves and each other at the same time as more "active" or as "passive", and may maintain this perception alternately. Concept formation may thus be summarized as: (1) "passive" / "active" in terms of complementary distribution among partners, (2) in terms of congruent, identical, and synchronized distribution among partners at each time (phase).

c) Terminological note: Without potentially negative connotations, one could also talk of "receptive" instead of "passive (attitude and behavior)". We are dealing with different focal qualities of experience in perception: "to be aroused (by somebody)" vs. "arousing (somebody)", focusing on the perception of one's own body vs. the female partner's body. See I.1.1d.

3.4 SOME IDEAS ABOUT A SENSORY SYNTAX

At the beginning of this chapter, two electromagnetic states were defined (cf. I.1.2a-b). The following sequential couplings of these states are proposed:

a) Passion (motor movement, heat production) → *Spirituality* (visual perception of the female partner or, respectively, of the male partner as a magnetic field and its integration into a shared electromagnetic field); "becoming aware of the female or male partner, respectively"; "contemplation of her (or him)"); or from the image of arousal to perception of the magnetic field as (an act of) consciousness. Altogether, deepened sensory perception produces consciousness thereof.

b) Spirituality → Passion (emphasis; intensification and production of energy in terms of movements, and of heat and skin or touch perception). Consciousness generates arousal.

4. COMPOSITION: SEXUAL UNION AS THE DEVELOPMENT OF A STRUCTURE

I choose the *"temporal course"* of sexual union as the starting point of this account (or reflection), *together with "conscious experience"*. The self-set task to compose a structure concentrates on these two features. Moreover, I distinguish between "actual situation", i.e., its perception and its composition, and "background knowledge", i.e., contextual environment and experiential knowledge so far (acquired schemes). See I.4.5, I.7.2.

4.1 THE INTERRELATIONSHIP BETWEEN "CONSCIOUS EXPERIENCE" AND "TEMPORAL COURSE" IN OUTLINE

1. Visualization: I propose a visualization: (1) a *"line"* which interconnects (2) *"stations"* (visualized: squares and a circle within each square) with each other. The line constitutes the pathway of progression (component: temporal course). The stations are *meditative centers* of raising sexual consciousness or of persisting contemplation by means of looking mutually into each other's eyes (component: focal places in time or focal moments).

2. Prototypically, I think of these "stations" in terms of the Hindu representations of *"chakras"* (Sanskritic; *organ-related centers of energy*) from approx. the upper forehead or vertex (thalamus, pineal body) to the pelvis

(urogenital system). For the time being, this is a graphic model (charted visualization).

3.Suggestion: One could try to *pass through this line with its stations* or "meditative" centers (Sanskritic *'mandalas'*) which are considered to be equivalent to the 'chakras', simultaneously (?) in both directions: into the direction of "sexual climax" (pelvis) and into the direction of the "mental and somatic center of long-term control" (pineal body). Eventually, this yields new insights into *sharing* or commonality and convergence ("aspect of affiliation or togetherness?") as well as into a *long range perspective* ("developmental aspect?") in sexual union: "mutual penetration". See A.2 and C.3.2, Note 9 (on pineal body).

4.2 TEMPORAL DIFFERENTIATION OF THE MAGNETIC FIELD OF SEXUAL UNION

We introduced in I.1:

a) Both the male partner and the female partner together build up the shared electromagnetic field as an integrated, most likely "phase-locked", energy image of sexual union by means of visuomotor activity and visual magnetization. This corresponds to the "stations" to a large degree. Using this concept, the component of *synchronic* conscious experience is procedurally captured in terms of energy image production, contemplation, and raising awareness.

b) This electromagnetic field is induced and temporally developed (1) by the sexual motor movements of both partners and (2) by the sexual sensory arousal of both partners. This corresponds to a large degree to the component of progression. Thus, the *diachronic* dynamics of this motor-sensory active electromagnetic field is captured.

4.3 SEQUENCE

In I.3.4, a basic sequential sensory pattern has been proposed which can be repeated several times in sexual union. The pathway of progression through the states of the electromagnetic field during union is compositionally characterized by the following motor and sensory *features*:

a) Penis motor aspects of behavior: shift between "fast" vs. "slow"; vaginally "to the right" vs. "to the left" vs. "centered/medial"; "vaginal-deep" vs. "(vaginal) G-point". Vaginal motor aspects correspond to the direction of these movements.

b) Looking at / visuomagnetics: “to look mutually into each other’s eyes” [= “close” vs. “(more) distant”] vs. “at the third eye of the female (or male respectively) partner”.

c) Sensory aspects: touching, kissing, embracing; “joy“ (I.3.2), “arousing (desiring)”; “expecting”; “fusing” as behavioral schemes. For definitions, cf. I.5 below.

d) Possible focus: “I am moving, she is getting aroused”; “I am getting aroused, she is moving or energizing herself”. From this, possible constituents of composition follow. The length of the sequences of contrasting features is a source of variation.

e) The sequence can be additionally varied by changing the position or by positions not dealt with at this place. See I.8.3.

4.4 STEPS

a) The *phase of intensification*, especially in the beginning, is characterized by arousal: e.g., erection and the penis entering and penetrating the female partner’s vagina, movement, the partner’s coordination of his look with nipples, breasts and the breathing of the female partner. The latter *coordinating step* is very important and forms *part of a scheme* according to I.7.2. [The same holds for the female partner]. Thus, arousal builds up. This phase is motion-intensive. A shared magnetic field is built up and is electrically charged.

b) The *plateau phase* is reached in transition from “close” (motion feeling) to “(more) distant” (to look into each other’s eyes). Movements are diminished. The magnetic field is now electrically charged.

c) After sensory intensification (i.e. a motion-intensive phase), the *plateau* is *held*. Arousal is slightly diminished. The penis remains stiff (as for the technique cf. I.2.2b). The beating of the heart remains harmonized and controlled at all times during sexual union. Ejaculation is avoided: The vesiculae seminales (behind the urinary bladder) remain cool. “Reaching and holding the plateau” could correspond to the “station” (the meditative center) according to I.4.1. A saturated electromagnetic field (probably with a slight decrease) can be expected at each station.

d) After frequent repetitions of the motion-intensive phase and of the plateau phase, tension is eventually released by orgasm, if possible, mutually and simultaneously among the partners. The perception of the field remains visual and conceptual (cf. (e) below). The *temporal duration* of sexual union is *variable*, adapted to personal needs and the personal learning of both the male and female partner.

e) *Alternative* concept formation (substituting 'state' for 'dynamics'): To identify the phases of movement increases and of arousal with the "stations" (meditative centers), substitution can be tried: the station as a form of movement, the line or rather the pathway of progression as a plateau state with visually perceptive and meditative moments (temporal duration). In general, it is important that the course of sexual union be *structured* and thus becomes *accessible to concept formation*, *to increased consciousness raising and to sexual memory formation.* See I.8.2 and moreover I.3.

f) *Observation*: The phase-defined steps correspond to parts of an electrophysiologically permanent (i.e. stable) schema of action as defined in I.7.2. This is especially true for point (a). Steps (a-d or e) may correspond to steps in learning on how to build up schemes of action.

*4.5 THOUGHTS ON REINFORCING RESONANCE

[* = Can be omitted.]

1. Visualization: Perceptual and conceptual thinking about shared sexual encounter and union, and about the shared electromagnetic field thereof can be supported by means of a visualization process. This visualization consists of a representation of a colored mineral structural lattice or, rather, of crystallized structures (colors, axes, refractions). The colored surface should be cracked. In this context, one should especially think of quartz or diamonds. The equivalent could be aromatized C-atoms in resonance (e.g. tyrosine, dopamine). See I.7.1(4).

2. Exemplification: I imagine a surface which is structured in terms of 5 vertical lines: two limiting lines which limit the surface to the right and to the left; two further lines more to the mid-right and mid-left. Thus, vigilance zones are defined to the right and to the left, each as marginal areas. The lines are in acrylic colors and the areas of the vigilance zones are crystalline-transparent green, blue, turquoise, or possibly reddish-brown. The midline (i.e., the fifth line) is yellow like a fresh corn cob, amber, or canary. The inner zone lying to the right and left of the midline have less (or more) saturated colors than the vigilance zones.

3. Functional attributions: (1) The colors might match the iris of the female partner (need not be the case). The colored structural lattice represents the space of action or thought towards the female partner. It helps to *exclude* other percepts or persons. (2) Moreover, the structural lattice has a *centering* function. It serves for thought collection and entering into making love. (3) The crystalline structure may bring about 3-dimensional *perception*, especially *of aromatization* (vibration, volume) which supports caressing and intimacy. Referring to these structural descriptions (1-3), I

use the structural lattice in a *sequence of phases*: Firstly, the phase of mental preparation and tuning into making love, i.e., to open the senses erotically and sexually, to perceive consciously with the senses, and to be mentally and sexually determined to make love to the female partner. Secondly, phase of caress (of cuddling, kissing, touching, etc.). Thirdly, phase of contemplation of the female partner (might instead form part of first phase). Fourthly, phase of transition to sensual passion (arousal). Fifthly, entering the phase of sexual union. The sequence of phases is just a proposal.

4. Commentary: The colored structural lattice may direct our attention to the aromatization of the female partner (hormonal oscillation, especially in the skin: tyrosine, estrogen components; moreover dopamine, etc.; crystalline: skin, muscles, and bones; light-magnetism or retino-electromagnetism: staring eyes). The skin as a primary target organ of the caressing touch is the basis for transmitting affect and for identity response, in the sense of distinguishing the exterior world from its interior representation and from one's own will, and of switching to an intimate body feeling. In terms of interaction and meaning, "We = You with me, me with you" corresponds to the sensual expressive behavior. Sensuality of caressing increases heat production and arousal, thus building-up a shared field between the male and female partner. Considering the transition from touching and kissing to sexual union, the following observation is important: "caressing" and "passion" are two components of "close" (cf. I.3.1 and I.5.2b). From kissing and touching to sexual union: From caressing, a plateau of arousal has to be built up (passion). Becoming conscious of the female partner in terms of intensified perception via the eyes and via the whole body can bring about the switch from caressing to intensified arousal.

5. Means of other sensory modalities: Besides visualizations, olfactory concepts or means (oils, fragrant substances) can reinforce sensual resonances. Music might be used for stimulation and harmonization, e.g., melodic synthesizer music, rhythmic percepts of a lattice of vibration. Perhaps one wants to *mark* and to bring about the *transformation of contexts*, e.g. "to leave everyday contexts or routine habits, entering making love".

5. ON CONCEPT FORMATION WITH REGARD TO ATTITUDE AND EXPRESSIVE BEHAVIOR

After introducing the distinctions in I.3.1 and I.8.1/2 [concept formation], I.5.1 is developed in contrast to I.5.2. "Fulfillment" is discussed as a long term concept in I.5.5c.

5.1 "BECOMING AWARE OF OR EXPECTING" THE FEMALE PARTNER (OR THE MALE PARTNER, RESPECTIVELY)

a) *"Thou" vs. "we":* I distinguish "thou" from "we". The latter is the goal to be striven for, to develop sexually and to reach. The starting point of "expecting" is the acuteness (definiteness) of "thou". This remains important for the "developed (polar) we". See "polar we" in I.7.2(5).

b) I become aware of my female partner. *She rises to my consciousness* (a) in terms of *sexual polarity* ("thou as a female being", "the other sex"); (b) in terms of an *autonomous person* ("thou"): independent, with her own will, free, invulnerable; (c) in terms of a *sensual percept* ("thou sexually"): Becoming aware of her consciousness, of her immune system, of her body, as her genuine structure which is not exhaustible in terms of "possession" or "habituation".

c) The female partner's field magnetism, specified in terms of the sensory property of *"(more) distant",* is grasped or identified visually by her partner (and vice versa). See I.3.1b. Procedure: An electromagnetic field of maximal tension is built up in terms of "increasing distance" visuomotorically. In sexual union, both partners *withstand* each other instead of yielding to mutual passion (and possible orgasm) immediately. *Both persist, wait, prolong sexual union by contemplation.*

d) I will never be the female partner (or the male partner, respectively): *We never confuse ourselves with each other,* we always remain as being two independent or autonomous personalities and two wills.

e) The concept of "becoming aware" or of "expecting" is construed as being passive or rather *contemplative*: I become aware of being together with my female partner. I become aware of her sexual participation and presence. I experience her effect and I "expect more from her". The emotional component is contemplative joy or pleasure.

f) Further semantic implications: In sexual terms, "becoming aware and expecting (contemplation)" constitutes the starting point to *"make love from '(more) distant' to 'close'"*. 'Close', i.e., overcoming 'expectancy', entails: cuddling, kissing; arousal, passionate joy, or pleasure. During sexual union, this pathway is also passed through from 'close' to '(more) distant' and altogether many repeated times.

g) Even in a *permanent relationship,* "expecting (contemplation)" is dynamically actualized in each act of sexual union. "Expecting" is not a projection onto any female being. "Expecting" is a concept which serves deepening sexual union with the female partner (or the male partner, respectively) by means of *repetitions*.

In accordance with E.25(3-4), we focus on producing electrical tension, experiencing structure, and deepening saturation by means of electromagnetic interaction and its duration. The technique of repolarization is described at another place. See I.7.2(8) in connection with points (a) and (b) above.

h) *Terminological note*: "Expecting (contemplation)" is not "languishing". The aspect of feeling is emphasized by selecting this term. Also, the terms 'pausing' / 'waiting', 'spirituality' / 'contemplation'; 'becoming aware of (the female partner / of the male partner, respectively)' could be chosen.

5.2 DESIRING THE FEMALE PARTNER (OR THE MALE PARTNER, RESPECTIVELY) IN PASSION OR WITH CARESSING

a) The concept is intended to be *active and initiating*, in contrast to "expectancy (becoming aware)" (passive-contemplative). See I.3.1a (to arouse s.o., to become aroused).

b) The procedural explication of the concept is coherently introduced in I.4.2b. See I.3.1a. "Desiring" is, above all, *motion-intensive or touch-intensive*. Moreover, it includes the components of "passion" and "caressing" (cf. I.4.5(4)). I.5.1g holds true here, correspondingly. The emotional component is joy as an activity or, specifically, a movement or touch. See I.8.1, Table 1.

5.3 "ATTAINING"

a) The concept incorporates a *component of achievement* to attain and to hold a state ("station"), i.e., a plateau.

b) Possibly, *saturation* is accomplished (see below).

5.4 "SEXUAL UNION"

This is the term for the *entire sexual encounter* (and its progressive course).

a) Sexual union is a *synchronization* or coupling of two individual body spheres and the corresponding magnetic fields, and merging them into one shared electromagnetic field of tension in terms of sexual energy, perception, arousal, and movement.

b) The *states*, then, of this shared magnetic field are: build-up, reduction and modulation of the field of tension; minima, maxima, optima; sexual saturation or orgasm or vaginal contraction, respectively.

c) *"Fusing"* could then be addressed as a special phase in sexual union = "mutual penetration consciously, mentally, physically" (cf. I.4.1(3)).

Note: "Matching tone (sound)" or "harmony" is a metaphor borrowed from music, but it can go beyond this. "Synchronization" is neurobiologically (nearly) phase-identical, coinciding with harmony and/or oscillation.

5.5 "SATURATION", "FULFILLMENT", "ORGASM"

a) *'Saturation'* is defined as a build-up and fill-up ('roundedness' or 'well-integratedness') of electrical tension (or rather as a level of energy) and volume, i.e., when withholding semen (no ejaculation); a slowly increasing dissolution of tension via the visual system, i.e., in sexual meditation in which one sits facing each other in sexual union.

b) *"Orgasm":* Ejaculation / vaginal contraction and dissolution of tension.

c) *"Fulfillment"* is a conceptualization of silent reflecting thought: "Actual satisfaction, satisfying experience so far, further expectancy of satisfying (orientation towards the future)". The relationship saturates and stimulates, again and again. It always leads to particular individual encounters. This kind of fulfillment can be tentatively defined in contrast to the publication of a book of one's own: This book gets a preferred place on the bookshelf at home.

d) *"After orgasm":* After orgasm, the shared magnetic field might continue to vibrate. To look at each other "sensually" in contrast to "cognitively informing, communicating, or agreeing" leads to "saturation or fulfillment", or to "expectancy, desire, or passion".

6. SEXUALITY AND PARTNERSHIP: CONCEPTUAL COORDINATION AND INTEGRATION

a) According to I.5.5: Sexual fulfillment is actualized again and again in particular *individual encounters*.

b) It is assumed that in the course of sexual encounters, the shared magnetic field and the process of *mutual remagnetization* can be *optimized*.

c) The relationship is oriented towards the *future*. Individual life history is conserved with each partner's consciousness.

d) The dimensions of *work* and of *interests* are *integrated into partnership*: for example, focussing interest on theory vs. practice. The following is a personal example.

e) Focus of interest, Example 1: Social association, image of Man as a problem, as a topic, as consciousness.

f) Focus of interest, Example 2: Mediation or instruction, healing as a problem, as a topic, as consciousness.

g) *Everyday life*: Eating, drinking, living, being together. *Focus*: work project(s) together or each on his or her own. *Long-term goals*: living together, staying together, traveling (geography). See D.24 [Need for freedom & its further development].

h) Everyday life entails *sexuality*.

i) The shared *developmental process* of the male and the female partner consists of *coordinating* processes of getting older, of symbiotic processes of living and eating together, and of learning processes. The common focus for the coordination of these developmental processes could consist of health (as a system state) and healing (as maintaining or restoring this system state) or rather the factual interest in them. The motto could be: Together we remain young. Man as a microcosmos or a Basal Anthropology could be another focus. A third focus could be the development of a shared style and taste. The motto could be: What intensifies the "thou" in terms of an erotic polar presence in a shared space, perhaps in contrast to "I" and "we", leads to repolarization (and again to erotic attraction) and to the ability to concentrate and to work productively? Symbiotic processes, especially, can lead to mutuality and to convergence in organizing one's life, in developing experience and in the conduct of life (= *"conscious we"*), but also to assimilation and flattening, i.e., the decay of images of electrical resistance and tension (= *"diffuse we"*).

j) A possible *phase-marked "gestalt circle"* becomes conscious and should remain conscious in work, leisure time (living, resting, enterprising), eating, drinking, in sexuality: Composition or creative organization, in conscious contrast and balance with routines, in individual work, in individual or shared interests, in shared sexuality, in shared eating and drinking, in shared and individual long term goals. The different phases are to be marked, if necessary, by means of a *conscious switch*. The contrast to these thoughts are "habituation", "consumption", "use", "satisfying a need" or "letting off steam", that is, stumbling semi-unconsciously into a routine or a behavioral activity.

7. PSYCHOSOMATIC INTEGRATION

7.1 SEXUALITY AND INTIMACY AS HEALTH

Sexuality forms part of the health and immune system of Man. Some procedural considerations:

1. The manual touching of the female partner (or respectively of the male partner) at the armpits.
2. Sexual union as mutual stimulation and tonic heightening of the immune system between the male and the female partner. This concerns, especially, blood circulation and normal muscle tone with both partners ("stretching" as a technique belongs to this). See also D.10(3) in this context.
3. Sexuality entails consciousness about each other, among the male and female partners, consciousness about reciprocity or rather equal rights.
4. Sexuality entails caressing: To this also belongs the consideration of the phases "before" and "after" sexual union which I have discussed less in this chapter. A structural concept thereof remains to be elaborated in a future publication, in the sense of I.4.1 or I.4.5(4)). Skin and the sphere of body feeling in general are central components of identity and of conceptualizing "I" and "thou" (cf. A.9(1/3)). Caressing during and after sexual union is especially important: Do show your female (or male) partner that you do love her (or him respectively).
5. From the viewpoint of health, anal intercourse is to be strictly excluded, that is, without exception. The same holds for hard drugs (cf. Self & Nestler 1995). See E.19, Thesis 1, Note 2 [Axial theory of health].

7.2 REPEATABILITY OF SEXUAL UNION: BUILDING UP A SCHEMA IN THE NEUROBIOLOGICAL SENSE VS. LEVELING HABITUATION

1. Building up a schema in terms of repetition: Sexuality entails the repeatability of sexual union with the same female partner (or with the same male partner, respectively). We are dealing with a potentially increasing feedback which includes consciousness, memory, sexual identity, and the body or even immune systems of both partners, male and female. A schema is built up which is prototypically saturated by means of an individualized relationship of partners ['prototypical': cf. H.2.3(2(2))]. Learning may require repetition.
2. Explication: The concept of "Repeating (sexual union)" is explicated in terms of:

"Repetition" $=_{ex}$ *"Recharging" & "Expectancy of optimized tension"*

"Repetition" is explicated as "Recharging (and remagnetization)". By means of the *procedural method* of mutual looking at or staring at, the partners *remagnetize themselves*, or are, rather, electrically recharged (de-

fined visuomagnetically and visuomotorically). Skeleton proportions, bone vibration and the hypothetical stimulation of blood production (most likely implying the bone marrow) or, at least, blood flow might play an additional role.

"Repetition" is, moreover, explicated as an "expectancy of optimized tension" in the sense of a *psychosexual attitude*, i.e., repetition leads to the development of a contrast in the sense of an optimization: "Good" or "best" configurations (or gestalts) of sexual union do "survive". These are the configurations which lead optimally ("prototypically") to (a) joy, enjoying taste, pleasure, (b) energetic tension, attraction, or passion, (c) reciprocity or mutuality, and (d) the shared development of a structure in sexual union.

The features of composition just introduced are successively elaborated in the following points.

3. Joy and tasteful enjoyment optimized: We are dealing with conscious, perceived and understood joy from different episodes of sexual union. These episodes are stored as prototypical images of joy, of desire, of pleasure and of tasteful enjoyment. The affective components of these images of memory are *reproducible* in the actual situation, i.e., in context with *crucial stimuli*. Tasteful enjoyment means: a style exists. Union is conscious, is composed, rests on mutual want, and produces joy in the proceeding action.

4. Electrical tension, attraction, passion optimized: These concepts refer to magnetism and to energetics. We are dealing with the stored prototypical episodic images of tension and resistance – of course, not of the aggressive, but of the biomagnetic type. These images of energy contain visuomagnetic, motor (movement, stretching) and sensory information. This information is partially reproducible.

5. Deepening: Reciprocity and mutuality optimized, that is, joy and participation, as well as psychosexual satisfaction are reciprocal and mutual. Reciprocity corresponds to the dynamic balance of control during sexual union (I.3.3: no one-sided dominance; the "polar we"). Tension grows out of reciprocity or mutuality. Going beyond the metaphoric analog, reciprocity and mutuality in terms of psychosexual attitude and behavior *correspond* to electromagnetic dipoles, to electrical current and resistance. Analog images of perceived electromagnetic resistance and electromagnetism as well as of reciprocal experience of motion and touch, and of consciousness are stored in the memory. These images might, predominantly, be visual, tactile and "spatial", including points of reference to hormonal changes, to affects and to different levels and stages of arousal. Patterns to be

transferred into actualization can be reproduced or derived from these memory images.

A *memory image* might consist (a) of a scene, (b) of part of a scene, (c) of points of reference or rather focal features. A scene or part of a *scene* might be reused or elaborated. *Focal points of reference* might serve to associate, to complete, to recombine, or to compose a new structure, intuitively as a performative enactment, cognitively and procedurally as a schema.

6. Shared actual and situational development of structure optimized: With both partners, "tried and tested" sequences as optimal patterns of composition will emerge (e.g. in terms of repetition, of feature condensation, and of pattern derivation). These "tried and tested" sequences consist of the integration of optimized components (I.7.2.(2-5)). Such integrated sequences can be reproduced or incorporated into new patterns. See I.3.4, I.4, I.8.3/4; I.2.

7. Electrophysiological explication of the concept of schema: There is no decay (no habituation in the neurobiological or electrophysiological sense), but after several learning trials and efforts of coordination, a schema is formed which one holds, which shows certain stylistic and compository variance, and which can be actualized in the respective situation when required with the same strength as before (cf. C.2.4(1;3/4), C.3.2(3), C.4(13), A.22C). In terms of sexual union, it appears to be a presupposition for saturation, mutual intensification, development, and fulfillment. The neurophysiological analysis corresponds to a suggested conscious attitude: "We do not permit flattening, leveling or decaying habituation." This corresponds to a neurophysically effective verbal, and even silent, addressing and programming of sexual memory.

8. Defence against habituation: The sexual repolarization of both partners, under the condition of preserving "commonality or sharedness", is basic for the defence against habituation (cf. especially I.5.1b). Self-conception, identity, freedom, and mutuality join profoundly in the experience of resistance and in the consciousness of resistance as a possible activated background context. The focus thereof can have sexual reference, e.g., in terms of a freethinking (liberal), antinormative, social and healthy orientation. [See I.7.1(5) and I.*References*, Note 1 below: Resistance against injury to the body, to the immune system or, rather, against perversion and against conditioning hatred, in the sense of survival as an individual personality]. Resistance is not directed against each other, but is shared among each other. Additionally, resistance does not depend upon party alignment. It brings about a reinforcement of electromagnetic resistance and of electromagnetic tension. Attitude and cognition have neuronal correlates. The

corresponding neurons integrate, amplify, and inhibit in terms of neuro-functional properties, thus contributing to physiological resistance.

9. Topical focus: Sexual union as a shared experience and composition of structures or forms corresponds to a permanent self-organizing focus (E.25) in which long term components are emphasized phase-like, striven at, or composed . E.25(4(4)) [Deepening of a relationship] may be adapted to repolarizing and to learning schemes of sexual union.

10. Building up a schema of action is a conscious learning process. See A.12-15. The linearization and coordination of focal features (motor and sensory aspects, temporal course, conscious experience, delaying orgasm, psychosexual attitudes) are especially relevant to learning, and are to be accomplished. Yoga, or M. Chia's Tao-Yoga, can create the learning conditions neuropsychologically. See A.22(10-11) [Build-up or leveling of schemata]. The construction and actualization of schemata consist, most likely, in translating marked images of experience and conceptual outlines or representations into sensory modalities, into three-dimensional space, or into temporal processes.

11. How to possibly continue? The joint development of schemes requires a *matching* female partner (and vice versa) and can mean, electrophysiologically, *optimizing* the following components: building-up schemes, experiencing the partner, generating energy, and holding a concept of partnership. According to I.6(a-c), I.6(d-g) and I.7.2(2-5), a reinforced schema could emerge which remains permanent and enables magnetism permanently: The shared magnetic field is jointly built up again and again and does not become broken. Voyeurism by third parties is to be avoided. It interrupts and produces stress. It is sometimes used for purposes of blackmail and humiliation.

12. Opened eyes: It is worth considering if closing one's eyes during sexual union corresponds to a canceling of central attention or, rather, the central control of consciousness in terms of sensory physiology (foveal information and oculomotor reflexes). One has to expect and anticipate a decoupling of the light-controlled suprachiasmatic bio-clock (a release of melatonine when the eyes are closed). This characterizes the state of sleep. One should, at least, look at the female partner's third eye (middle of the lower forehead) in case she closes her eyes. To make love consciously means to open one's eyes and let nothing relevant slip away into the unconscious or the unrecognized.

8. CONCEPT FORMATION: PROPERTY MATRICES, SEQUENCES, CONCEPTUAL PATTERNS

8.1 BASIC MATRIX

The basic concepts as explicated in Chapter I. can be represented as a property matrix. This matrix can represent a conceptual basis for the patterns of sexual union.

DIMENSION	**Contemplative**	**Active (dynamic)**
Coordination: visual-visuo-motor & sensorimotor	"(More) distant" visually & G-point vaginally stimulated	"Close" visually & vagina in-depth stimulated
Expressive behavior	"Expecting / waiting"	"Desire / passion"
Electromagnetics / dipole	"Integrated magnetic field" (= whole); focus (as awareness) *and whole* scene	"Image of arousal and movement" (= part); motion *within* scene
Emotion	"Joy" = enjoying taste as an expectancy	"Joy" = activity; movement

Table 1: Property Matrix "Contemplative" vs. "Active (dynamic)"

The features "focus and whole scene" vs. "movement within the scene" represent the field of sexual union in terms of systematic differences.

8.2 VARIATION OF THE BASIC MATRIX

At this place, variations in concept formation are proposed. The categories "focal" vs. "temporal" within the dimension "control/dynamics" in Table 2 & 3 are substitutable for each other according to the proposal in I.4.4e. Thus, we receive the following alternative (Suggestion 1 vs. 2):

(1) Focal(-contemplative): visual perception; holding, harmonizing movement/motion or its image. *Temporal(-dynamic):* movement, arousal [Table 2].

(2) Focal(-dynamic): movement, arousal. *Temporal(-contemplative):* visual perception, harmonization of movements/motion impressions [Table 3].

DIMENSION	Focal-contemplative	Temporal-dynamic
Composition / organization	"Station (= meditative center)"	"Line (= pathway)"
Control / dynamics	"Holding the energy image or field"; "plateau state" (= *[more] distant*)	"Image of motion, of arousal developed progressively", "movement" (= *close*)
Attitude towards action	"Contemplative (expecting)"	"Active (productive)"

Table 2: Property Matrix "Focal(-contemplative)" vs. "Temporal(-dynamic)"

DIMENSION	Focal-dynamic	Temporal-contemplative
Composition / organization	"Station (= center of movement or touch)"	"Line (= pathway as meditation)"
Control / dynamics	"Image of motion, of arousal generated", "movement" (= *close*)	"Holding the image or field of energy over time"; "plateau state" (= *[more] distant*)
Attitude towards action	"Active (productive)"	"Contemplative (expecting)"

Table 3: Property Matrix "Focal(-dynamic)" vs. "Temporal(-contemplative)"

"Station" and "line" can be graphically represented in accordance with both these suggestions:

Suggestion 1:
◙ = "Station" (= *mandala = chakra*): focal(-contemplative) **[fk]**, i.e. *conscious experience of perception.*
▬ = "Line" (temporal course): temporal(-dynamic) **[td]**, i.e. *duration of arousal*.
◙▬◙▬◙▬◙▬◙▬◙▬ etc.

Suggestion 2:
◎ = "Station" *(= mandala = chakra):* focal-dynamic **[fd]**, i.e. *conscious experience of arousal*.
▬ = "Line" (= temporal course): temporal-contemplative **[tk]**, i.e. *duration of visual and* corresponding *penile-vaginal perception*.
◎▬◎▬◎▬◎▬◎▬◎▬ etc.

8.3 FURTHER DEVELOPMENTS IN CONCEPT FORMATION: VARIATION OF SEQUENCES AND THEIR FEATURES

So far, we have considered the contrasts between "focal" vs. "temporal". Other variations in concept formation could concern:

(1) "Active" vs. "Receptive": According to I.3.3, these attitudinal qualities can be (a) *contrastive* among partners at the same time (synchronously) or (b) *identical* and synchronous among partners, possibly alternating in terms of phases. *Attitudes* as described in I.3.3 and *perceptual qualities* as specified in I.3.1 and I.5.1/5.2 are to be *distinguished*.

(2) The difference between *"close = passion" vs. "close = caress":* We would, thus, obtain three instead of two features, i.e., *"Expecting (contemplation)" [K] – "Passion" [L] – "Caress" [Z]*.

(3) Combinatorially, two classes of sequences in sexual union are proposed:

a) Elementary sequences (duplets as minimal combinations, i.e. the combination of two features, according to I.3.4, I.4, I.5.1/I.5.2, but according to I.8.3(2) to be selected from a set of three features; otherwise it would allow only for K-L and L-K).

b) Triplet sequences (according to I.8.3(2)). The triplet sequences can be combined with each other as well as with elementary (duplet) sequences.

Elementary sequences: K-L; L-Z; L-K; K-Z; Z-K; Z-L.
Triplet sequences: K-L-Z; L-Z-K; L-K-Z; Z-L-K; Z-K-L; K-Z-L.
Combination of elementary sequences (duplets) and triplets, e.g.:
K-L / K-L-Z / L-K etc.

(4) The perceptual focus in terms of the ego's attention can be: *"my own body" (m) vs. "your body" (d) vs. "our bodies together" (u).* These different perceptual qualities can be combined, additionally, with (1a/b) or (2) above. Combinatorial constraint might hold here. For example, K(m) appears to me as being meaningless (narcissistic?). As an example, a combination with (2) is given:

K(d)-L(m)-L(d)-Z(d)-Z(u) etc.

[= "Contemplation of your body or person – My passion – Your passion – Caressing your body – Caressing our bodies"]
Combinations with (1a/b) could be obtained correspondingly.

(5) The defining features of "close" vs. "(more) distant" can, tentatively, be substituted for each other:

"G-point" and "mutual distance of eyes < or = 30 cm" ***(=K+)***
vs. "*Deep-vaginal" and "mutual distance of eyes > 50 cm"* ***(=L+).***
This is likely to be difficult and might be accomplished for a few moments only.

(6) According to H.2.3 [Spatial experience], we obtain the following qualities:

(a) *Limits* (here: the room /space of sexual union) [G].

(b) *Structural kernel* (The partners, sexual union, the intention of composing) [S].

(c) *Interface* (interaction of eyes, interaction vagina / penis, pelvis, interaction of hands or fingers; possibly nipples, lips) [I].

From this, focally different qualities of perception and of motor aspects result. As an example:

G = intention of position and spatial conditions (e.g., room, wall, bed, chair, pillow, carpet or floor, etc.);
S = position of actual union; composition according to (3) above;
I = contrastive modalities of perception and of motor activity (according to point (2): K vs. L vs. Z; according to (4): m vs. d vs. u; according to (5): K vs. K+, L vs. L+ ; according to I.8.2 (Table 1 & 2): temporal course (tk/td) vs. focus (fk/fd).

(7) These alternative concept formations and the thus resulting sequential patterns serve as examples and suggestions for structural fantasy as well as for the conscious comprehension of sexual union. This facilitates conceptualizing, building-up, and learning schemes of sexual action, as well as disposing of these schemes in the actual situation of performance. Attention is directed towards differentiating and recombining relevant features.

8.4 PATTERNS OF SEQUENTIAL COMPOSITION

The concepts and sequences developed so far in I.8.1-8.3 permit the buildup of patterns of sexual composition. These are determined in terms of combinatorics, temporal duration, compository consciousness, and performing ability to compose within the situation. Composition can be carried out intuitively within the situation or it can be conceived, outlined and anticipated with the aid of paper and pencil. The sequential patterns outlined are thus comparable to a musical score. One can go through this idea of a musical score and transpose it into several compository examples; or one can reject this idea as being too strongly planned.

Conceptual ideas for a pattern outline: according to I.8.3(6), the positional intention is fixed. Spatial conditions will be arranged correspondingly.

Sexual union can follow sequential patterns as outlined in I.7.2(6) and I.8.3(3).

As for an episode of sexual union, a special contrastive modality of perception which goes beyond I.8.3(3) can be focused upon, e.g., a combination according to I.8.3(4) or a pattern according to I.8.3(5).

Résumé: "When conceptual thinking fails, Man (in this case: both partners) simply turn to action" [taken from a philosophical treatise].

References: Mantak Chia & Maneewan Chia 1987 and 1988 (on the Tao-Yoga of male and female sexuality), including anatomical sketches (German editions). In general, the following holds true as a quality criterion (in order of increasing degree of explicitness): Only such instructions, overwhelmingly inspired by ancient Indian or Chinese traditions, are recommended in which anal intercourse is not mentioned, is not recommended, or in which the corresponding (partially irreversible) health risks are pointed out[42]. The relevant Tantric and Taoist instructions contain a wealth of further positions of sexual union. Also see M. Chia with W. Wei & L. Holden 2003 (German edition), especially the procedural representation, i.e., of contraction of ring muscles, especially of the musculus pubococcygeus, p. 58: "All ring muscles in the body reflect each other" (cf. E.19/Th.1, note 2). Ch. VII and VIII deal with traditional Taoist beliefs about erotic typology which may be culturally relative.–

Most cases of unserious imitations can be quickly discerned and reduced in terms of source criticism to misinformation and counter-education, or rather counter-enlightenment, on the basis of their missing sense of style or even vulgar vocabulary, of their frequently irrelevant case examples, of their playing down of risks, and of their seducing attitude towards rectal intercourse (calling arguments against it "prejudice"). Psychoanalysts, psychotherapists, etc. might have a peculiar sex education, with psychosexually unacceptable attitudes.

[42] Cf. Amanda Roberts & Barbara Padget-Yawn: "Liebe und Sexualität", Könemann Verlag, Köln 2000:86 (German edition). To the health threatening, misleading concepts pertains the recently published opinion that the male G-point lies in the rectum. In the area referred to, the zone of tests for early discovery of prostate cancer is to be found, i.e. the prostate gland behind the rectal intestine and urinary bladder (Roberts & Padget-Yawn 2000:199). The rectum is not a sexual organ. If one wants to search for a male equivalent to the G-point, it is probably to be found in analyzing the interactive stimulation of the female G-point: in the area of the glans penis or rather towards its bodywards part and the part immediately following bodywards, because functions seem to be neural, sanguinal and muscular. See M. Chia et al 2003: 55/Fig.3-4.

REFERENCES

1. Abelson, Robert P. et al (Eds.): "Theories of Cognitive Consistency: A Sourcebook". Chicago 1968: Rand McNally. [*contains:* R. P. Abelson, "Psychological Implication"; K. M. Colby, "A Programmable Theory of Cognition and Affect in Individual Personal Belief Systems"].
2. Abelson, Robert P.: "Concepts for Representing Mundane Reality in Plans" (in: Bobrow & Collins 1975).
3. Abelson, Robert: "The Structure of Belief Systems" (in: Schank & Colby 1973).
4. Aebli, Hans: "Denken: Das Ordnen des Tuns", 2 vols. Stuttgart 1980/1981: Klett-Cotta.
5. Aggleton, John (Ed.): "The Amygdala. Neurobiological Aspects of Emotion, Memory, and Mental Dysfunction". New York 1992: John Wiley.
6. Akmajian, A. & R. Demers & A.K. Farmer & R.M. Harnish: "Linguistics. An Introduction to Language and Communication". Cambridge, MA 1990: MIT.
7. Albert, Hans: "Traktat über kritische Vernunft". Tübingen 1968: Mohr.
8. Albert, Hans: "Traktat über rationale Praxis". Tübingen 1978: Mohr.
9. Allman, John: "Reconstructing the Evolution of the Brain" (in: Este Armstrong & D. Falk, "Primate Brain Evolution Methods and Concepts". New York / London 1982: Plenum Press).
10. Amaral, D.G.: "The Primate Amygdala" (in: Aggleton (Ed.) 1992).
11. Anderson, Michael & S. O'Mara: "Analysis of Recordings of Single-Unit Firing and Population Activity in the Dorsal Subiculum of Unrestrained, Freely Moving Rats" (in: J. Neurophysiol. 90:655-665 (2003)).
12. Antaki, Charles & Brewin, Chris: "Attribution and Psychological Change". London & New York 1982: Academic Press.
13. Antonovsky, Aaron: "Unraveling the Mystery of Health. How People manage Stress and stay well". San Francisco & London 1987: Jossey-Brasser Publisher.
14. Arbib, Michael (Ed.): "Handbook of Brain Theory and Neural Networks". Cambridge, Mass. 1995: MIT Press.
15. Berne, Eric: "Transactional Analysis in Psychotherapy". New York 1961: Grove Press.
16. Berofsky, Bernard (Ed.): "Free Will and Determinism". New York 1966: Harper & Row.
17. Berofsky, Bernard: "Liberation from Self. A Theory of Personal Autonomy". Cambridge 1995: Cambridge University Press.
18. Binkley, Sue: "The Pineal: Endocrine and Neuroendocrine Function". Englewood Cliffs 1988: Prentice Hall.
19. Blühdorn, Jürgen (Ed.): "Das Gewissen in der Diskussion". Darmstadt 1976: Wissenschaftliche Buchgesellschaft (*contains:* Hans Reiner, "Die Funktionen des Gewissens", *especially* p.314, 'Nachtrag (April 1975)' *[The establishment of facts and evaluations are differentiated as control functions of conscience]*; Dietrich Rüdiger, "Der Beitrag der Psychologie zur Theorie des Gewissens und der Gewissensbildung", S.461ff.).
20. Bobrow, D.G. & A. Collins (Eds.): "Representation and Understanding: Studies in Cognitive Science". New York 1975: Academic Press; Minsky, Marvin: "A Framework for Representing Knowledge" (in: P. Winston (Ed.), "The Psychology of Computer Vision". New York 1975: McGraw-Hill).
21. Boncinelli, Edoardo, & A. Mallamaci & V. Broccoli: "Body Plan Genes and Human Malformation" (in: Advances in Genetics, Vol. 38, 1998:1-29).

22. Bowman, Barbara: “Hepatic Plasma Proteins. Mechanism of Function and Regulation”. San Diego, New York, London 1993: Academic Press.
23. Braak, Heiko & E. Braak: “The Human Entorhinal Cortex: Normal Morphology and Lamina-Specific Pathology in Various Diseases” (in: Neuroscience Research, Vol. 15/1992:6-31).
24. Brammer, Lawrence: “How to cope with Life Transitions. The Challenge of Personal Change”. New York & Washington 1991: Hemisphere Publishing Corporation.
25. Brazier, Madeleine: “The Early Development of Quantitative EEG Analysis: The Roots of Modern Methods” (in: Marcel Monnier, “Functions of the Nervous System. Vol. 4: Psycho-Neurobiology”. Amsterdam / New York 1983: Elsevier).
26. Brown, S.C. & J..A. Lucy (Eds.): “Dystrophin. Gene, Protein, and Cell Biology”. Cambridge 1997: Cambridge University Press.
27. Bunge, Mario: “Scientific Research, Vol. I: The Search for System”. Berlin, Heidelberg, New York 1967: Springer Verlag.
28. Bunge, Mario & R. Ardila: “Philosophy of Psychology”. Berlin & Heidelberg 1987: Springer-Verlag.
29. Bunge, Mario: “Treatise on Basic Philosophy, Vol. 8. Ethics: The Good and the Right”. Dodrecht, NL & Boston, USA 1989: Kluwer Academic Publishers.
30. Calvin, William H.: “Cortical Columns, Modules and Hebbian Cell Assemblies” (in: Michael Arbib (Ed.), “Handbook of Brain Theory and Neural Networks”. Cambridge 1995: MIT Press).
31. Carneiro, Roberto: “A Theory of the Origin of the State” (in: Science, 1970, Vol. 169: 733-738).
32. Chia, Mantak & M. Chia: “Das Tao Yoga der unvergänglichen Sexualität”. Winterthur 1987: Ansata-Verlag (German edition).
33. Chia, Mantak & M. Chia: “Das Tao Yoga der weiblichen Sexualität”. Winterthur 1988: Ansata-Verlag (German edition).
34. Chia, Mantak & W. Wei & L. Holden: “Das Tao von Liebe und Sex”. München 2003: Lotos / Ullstein / Heyne / List (German edition).
35. Clark, Herbert & E. Clark: “Psychology and Language”. New York 1977: Harcourt Brace Jovanovich.
36. Davis, Michael: “The Amygdala and Conditioned Fear” (in: Aggleton (Ed.) 1992).
37. De Beaugrande, Robert: “Text, Discourse and Process. Toward a Multidisciplinary Science of Texts”. London 1980: Ablex Corporation, Longman Group Ltd.
38. Depue, Richard & P. Collins: “Neurobiology of the Structure of Personality: Dopamine, Facilitation of Incentive Motivation and Extraversion” (in: Behav. & Brain Sciences 1999/22).
39. Dingwall, William Orr: “The Evolution of Human Communicative Behavior” (in: Frederick J. Newmeyer (Ed.), “Linguistics. The Cambridge Survey, Vol. III: Language. Psychological and Biological Aspects”. Cambridge, Engl. 1988: Cambridge University Press).
40. Duboule, D. (Ed.): “A Guidebook to Homeobox Genes”. Oxford 1993: Oxford University Press.
41. Eichenbaum, H. & T. Otto & N.J. Cohen: “Two Functional Components of the Hippocampal Memory System” (in: Behav. & Brain Sciences 1994/17:449ff.).
42. Ember, Carol & Ember, Melvin: “Anthropology”. Englewood Cliffs, N.J. 1981³: Prentice Hall.
43. “Encyclopedia of Human Biology” (Dulbecco, Renato (Ed.-in-Chief); San Diego 1991: Academic Press); [Gauldie, Jack: “Acute Phase Response”, Vol. I:25ff.; Glenner, George G.: “Alzheimer’s Disease”, Vol.I:209ff.].

44. Fallon, James & S.E. Loughlin: “Monoamine Innervation of Cerebral Cortex and a Theory of the Role of Monoamines in Cerebral Cortex and Basal Ganglia” (in: E. Jones & A. Peters (Eds.) 1987, Vol. 6).
45. Fillmore, Charles: “The Case for Case” (in: E. Bach & R.T. Harms (Eds.), “Universals in Linguistic Theory”, New York 1968: Holt, Rinehart and Winston).
46. Flannery, Kent (Ed.): “The Early Mesoamerican Village”. New York 1976: Academic Press.
47. Foot, Philippa: “Free Will as Involving Determinism” (in: B. Berofsky (Ed.) 1966).
48. Fujita, Ichiro: “The Inferior Temporal Cortex: Columns and Horizontal Axons” (in: H. Sakata & J.M. Fuster (Eds.) 1997).
49. Funder, David C.: “The Personality Puzzle”. New York / London 2004 (first 1997): W.W. Norton & Co.
50. Gaffan, David: “Amygdala and Memory of Reward” (in: J. Aggleton (Ed.) 1992: 471-483).
51. Gaffan, David & A. Parker: “Interaction of Perirhinal Cortex with the Fornix-Fimbria: Memory for Objects and ‘Object-in-Place’ Memory” (in: J. Neurosc. 1996 / 16(18): 5864-5869).
52. Gallese, Vittorio: “The Acting Subject” (in: Metzinger 2000).
53. Galleses, Vittorio: “Embodied Simulation: From Neuron to Phenomenal Experience” (in: Phenomenology & the Cognitive Sciences, in press).
54. Gallese, Vittorio: “Intentional Attunement. The Mirror Neuron System and its Role in Interpersonal Relations” (www.interdisciplines.org/mirror/papers/1; [Padua 2004a]).
55. Gallese, Vittorio & C. Keysers & G. Rizzolatti: “A Unifying View of the Basis of Social Cognition” (in: Trends in Cognitive Science, Vol.8/No.9, 2004b).
56. Galtung, Johan: “The Basic Needs Approach” (in: L. Lederer (Ed.) in cooperation with J. Galtung & D. Antal, “Human Needs: A Contribution to the Current Debate”. Cambridge, MA 1980: Oelgeschlager, Gunn & Hain Publishers).
57. Galtung, Johan: “Towards a Theory of Freedom and Identity. A New Frontier in Peace Research” (in: J. Galtung, “Collected Essays in Peace Research”, Vol. 5. Copenhagen 1980: Ejlers).
58. Gauldie, J.: s. “Encyclopedia Of Human Biology”, Vol.I:25ff.
59. Gazzaniga, Michael (Ed.): “Handbook of Cognitive Neuroscience”. New York 1993: Plenum Press.
60. Gibson, K.R. & T. Ingold, “Tools, Language and Cognition in Human Evolution”. Cambridge, Engl. 1993: Cambridge University Press.
61. Glenner, G.: s. “Encyclopedia Of Human Biology”, Vol.I: 209ff.
62. Goldman-Rakic, Patricia: “Changing Concepts of Cortical Connectivity: Parallel Distributed Cortical Networks” (in: P. Goldman-Rakic & W. Singer (Eds.): “Neurobiology of Neocortex”. Berlin 1988: John Wiley).
63. Goslin, D.A. (Ed.): “Handbook of Socialization Research. Theory and Research”. Chicago 1969: Rand McNally.
64. Gray, Jeffrey: “A Model of the Limbic System and Basal Ganglia: Applications to Anxiety and Schizophrenia” (in M. Gazzaniga (Ed.), “Handbook of Cognitive Neuroscience”, S.1165ff. New York 1993: Plenum Press).
65. Gray, Jeffrey: “The Contents of Consciousness: A Neuropsychological Conjecture” (in: Behav. & Brain Sciences 1995/18:659-722).
66. Gray, Jeffrey: “On Binding and Timing”. N.d.
67. Gray, Jeffrey & J.N.P. Rawlins: “Comparator and Buffer Memory. An Attempt to Integrate Two Models of Hippocampal Function” (in: Robert L. Isaacson & K. Pribram (Eds.), “The Hippocampus”, Vol. 4; New York 1986: Plenum Press).

68. Griffin, James: “Well-Being. Its Meaning, Measurement and Moral Importance”. Oxford 1986: Clarendon Press.
69. Gundert, Wilhelm: “Bi-Yän-Lu. Meister Yüan-wu’s Niederschrift von der Smaragdenen Felswand”. München 1967: Carl Hanser Verlag.
70. Halliday, M.K.: “Learning How to Mean. Explorations in the Development of Language”, London 1975: Edward Arnold Publ. Ltd.
71. Hamilton, Vernon & D.M. Warburton (Eds.): “Human Stress and Cognition. An Information Processing Approach”. Chichester, New York etc. 1979: J. Wiley.
72. Haviland, William A.: “Cultural Anthropology”. New York & Orlando, FL 1996 (8. Aufl.): Harcourt, Brace & Co.
73. Heider, Fritz: “The Psychology of Interpersonal Relations”. New York 1958: John Wiley.
74. Hinz, Eike: “Mesoamerikanistik als Sozialwissenschaft. Soziale Evolution, soziales System, soziales Verhalten, soziale Kognition in Mesoamerika”. Hamburg 2002: Wayasbah.
75. Hobson, J.D. (Ed.): “Special Issue on Sleep and Dreaming” (Behav. & Brain Sc. 2000 / 23 [No.6]).
76. Holzhey, Helmut: “Gewissen?”. Basel 1975: Schwabe & Co. (*contains*: Fritz Oser, “Der Aufbau eigenständiger Handlungsregulation und die inhaltliche Bestimmung des Gewissens durch Schuld”, p.68ff., *especially* 72-75) *[Conscience as action regulation; I deny guilt as a necessary presupposition of conscience.]*.
77. Homans, George C.: “Social Behavior. Its Elementary Forms”. New York 1974 (first 1961): Harcourt Brace Jovanovich.
78. Homans, George C.: “The Human Group”. London 1975 (first 1951): Routledge & Kegan Paul.
79. Horowitz, Mardi J.: “Psychological Response to Serious Life Events” (in: Hamilton & Warburton 1979).
80. Hummell, Hans & K.-D. Opp: “Die Reduzierbarkeit von Soziologie auf Psychologie”. Braunschweig 1971: Vieweg.
81. Isaacson, Robert L. & K. Pribram: “The Hippocampus”, Vol. 2-4. New York 1975ff.: Plenum Press.
82. Ito, M. & Y.Miyashita & E. Rolls (Eds.): “Cognition, Computation and Consciousness”. Oxford: Oxford Press 1997.
83. Jones, E. & A. Peters: “Cerebral Cortex, Vol. 1-6”. New York / London 1983ff.: Plenum Press.
84. Jouvet, M.: “Neurobiology of Dream” (in: Monnier 1983, Vol.4:227-248).
85. Kahle, Werner: “Taschenatlas der Anatomie. Bd. 3: Nervensystem und Sinnesorgane”. Stuttgart 1991: Thieme.
86. Kail, Robert V. & J. C. Cavanaugh: “Human Development. A Lifespan View”. Belmont, CA 2000²: Wadsworth / Thomson Learning.
87. Kalivas, Peter & Ch. Barnes (Eds.): “Limbic Motor Circuits and Neuropsychiatry”. Boca Raton 1993: CRC Press.
88. Kamlah, Wilhelm: “Philosophische Anthropologie”. Darmstadt 1973: BI-Taschenbuch.
89. Keesing, Roger: “Cultural Anthropology: A Contemporary Perspective”. New York 1981 (2. Aufl.): Holt, Rinehart & Winston.
90. Kircher, Tilo & A. David (Eds.): “The Self in Neuroscience and Psychiatry”. Cambridge, UK 2003: Cambridge University Press.
91. Klaus, Georg: “Wörterbuch der Kybernetik”. Frankfurt/M. 1969: Fischer.
92. Klein, J.: “Inzest. Kulturelles Verbot und natürliche Scheu”. Opladen 1991: Westdeutscher Verlag (= Diss. 1989).

93. Lakein, A.: “How to get Control of your Time and your Life”. New York 1973: Signet Books.
94. Lakoff, Gordon & M. Johnson: “Metaphors we live by”.
95. Lang, Hartmut: “Exogamie und interner Krieg in Gesellschaften ohne Zentralgewalt”, Dissertation Hamburg 1974.
96. Langer, Susanne K.: “Philosophy in a New Key. A Study in the Symbolism of Reason, Rite and Art”. New York 1942: Mentor Book (and Cambridge, MA 1942: Harvard University Press).
97. Langer, Ellen: “Psychology of Chance”. Ms. 1974.
98. Laucken, Uwe: “Naive Verhaltenstheorie”. Stuttgart: Klett.
99. Leporé, F. & Ptito, M. & H.H. Jasper (Eds.): “Two Hemispheres, One Brain. Functions of the Corpus Callosum”. New York 1986: Liss.
100. Lévi-Strauss, Claude: “Strukturale Anthropologie” [Bd. 1]. Frankfurt 1967: Suhrkamp (french 1958).
101. Levy, Marion: “The Structure of Society”. Princeton 1952: Princeton University Press.
102. Lickona, Thomas (Ed.): “Moral Development and Behavior”. New York 1976: Holt, Rinehart & Winston.
103. Mackie, John L.: “Ethics. Inventing Right and Wrong”. London 1990: Penguin Books (first: 1977, Pelican Books).
104. Mandler, George: “Thought Processes, Consciousness, and Stress” (in: Hamilton, Vernon & D.M. Warburton (Eds.): “Human Stress and Cognition. An Information Processing Approach”, Chichester, New York etc. 1979: J. Wiley).
105. Manzoni, T. & P. Barbaresi & F. Conti: “The Callosal Connections of the Primary Somatosensory Cortex and the Neural Bases of Midline Fusion” (in: Exp. Brain Research, 1989, Vol.. 76:251-266).
106. Meier-Ruge, W.A. & C. Bertoni-Freddari: “Pathogenesis of Decreased Glucose Turnover and Oxidative Phosphorylation in Ischemic and Trauma-induced Dementia of the Alzheimer Type” (in: Annals N.Y. Acad. of Sc. 1997, Vol. 826:229ff.).
107. Merzenich, M.M.: “Dynamic Neocortical Processes and the Origins of Higher Brain Functions” (in: J.-P. Changeux & M. Konishi (Eds.), “The Neural and Molecular Bases of Learning”, S.337-358. New York 1987: John Wiley (S. Bernhard, Dahlem Konferenzen)).
108. Metzinger, Thomas: “Neural Correlates of Consciousness”. Cambridge, Mass. 2000: MIT.
109. Minsky, Marvin: “A Framework for Representing Knowledge” (in: P. Winston (Ed.), “The Psychology of Computer Vision”. New York 1975: McGraw-Hill).
110. Monnier, Marcel: “Sleep, Dream and Waking as an Integral Function” (in: Monnier, M. (Ed.), “Functions of the Nervous System”, Vol.4; Amsterdam 1983: Elsevier) [Bio-Chronologie, S. 11ff.].
111. Naess, Arne: “Communication and Argument: Elements of Applied Semantics”. Oslo 1966: Universitetsforlaget; London: Allen & Unwin. (Swed.: “Empirisk Semantik”; German: “Kommunikation und Argumentation”).
112. Nelson, J.I.: “Visual Scene Perception: Neurophysiology” (in: Arbib (Ed.) 1995).
113. Norman, Donald A.: “Memory, Knowledge, and the Answering of Questions” (in: R.L. Solso (Ed.), “Contemporary Issues in Cognitive Psychology: The Loyola Symposium”; Washington, D.C. 1973: Winston).
114. O’Mara, Shane M. & S. Commins & M. Anderson & J. Gigg: “The Subiculum: A Review of Form, Physiology and Function” (in: Progr. Neurobiol. 64:129-155 (2001)).

115. O'Mara, Shane M. & S. Commins & M. Anderson: "Synaptic Plasticity in the Hippocampal Area CA1-Subiculum Projection: Implications for Theories of Memory" (in: Hippocampus 10:447-456 (2000)).
116. Opp, Karl-Dieter: "Soziales Handeln, Rollen und soziale Systeme. Ein Erklärungsversuch sozialen Verhaltens". Stuttgart 1970: Enke-Verlag.
117. Oppitz, Michael: "Notwendige Beziehungen. Abriss der strukturalen Anthropologie". Frankfurt/Main 1975: Suhrkamp.
118. Ostrom, Elinor: "Collective Action and the Evolution of Social Norms" (in: Journal of Economic Perspectives, 2000, Vol. 14/3:137-158).
119. Papalia, Diane & R.A. Olds & R.D. Feldman: "Human Development". Boston 2004/9th ed.: McGraw-Hill Co.
120. Pfurtschaller, G. & F.H. Lopes da Silva: "Functional Brain Imaging". Toronto & Bern 1988: Hans Huber.
121. Pohle, Wulf & L. Acosta & H. Rüthrich & M. Krug & H. J. Matthies: "Incorporation of [^{3}H] Fucose in Rat Hippocampal Structures after Conditioning by Perforant Path Stimulation after LTP-Producing Tetanization" (in: Brain Research, 1987, Vol. 410: 245-256).
122. Popp, Fritz A. et al (Ed.): "Electromagnetic Bio-Information". München/ Wien/ Baltimore 1979: Urban & Schwarzenberg.
123. Posner, Michael: "Attention in Cognitive Neuroscience: An Overview" (in: M. Gazzaniga (Ed.), „Handbook of Cognitive Neuroscience". New York 1993: Plenum Press).
124. Post, "Seeds of Na, K-ATPase" (in: Ann. Rev. Physiol. 1989: 8f.).
125. Preuss, Todd M.: "The Argument from Animals to Humans in Cognitive Neuroscience" (in: Gazzaniga (Ed.) 1993:1227ff.).
126. Probst, Heinz: "Pfeile, Netze und Tortillas. Dynamisches Modell zur Ökologie einer bäuerlichen Maya-Gesellschaft in Quintana Roo, Mexiko". Hamburg 1985: Wayasbah.
127. Robbins, R.H.: "Identity, Culture, and Behavior" (in: J. Honigmann (Ed.), "Handbook of Social and Cultural Anthropology", Chicago 1973: Rand McNally).
128. Rogers, Carl: "Lernen in Freiheit. Zur Bildungsreform in Schule und Universität". München 1974: Kösel-Verlag.
129. Rogers, Carl R.: "Towards a Theory of Creativity" (in P.E. Vernon (ed.), "Creativity. Selected Readings", Harmondsworth (1970; 1973):137ff: Penguin Books).
130. Rolls, Edmund: "Spatial Memory, Episodic Memory, and Neuronal Network Functions in the Hippocampus" (in: L.R. Squire & E. Lindenlaub (Eds.), "Biology of Memory", S.445-470. Stuttgart / New York 1990: Schattauer Verlag (Symposium Medicum Hoechst 23)).
131. Rolls, Edmund: "Brain and Emotion". Oxford 1999: Oxford University Press.
132. Rolls, Edmund & Treves, Alessandro: "Neural Networks and Brain Function". Oxford 1998: Oxford University Press.
133. Rosch, Eleanor et al: "Basic Objects in Natural Categories" (in: Cogn. Psych., Vol. 8, 1976).
134. Rosene, Douglas L. & G. Von Hoesen: "The Hippocampal Formation of the Primate Brain: A Review of Some Comparative Aspects of Cytoarchitecture and Connections" (in: E. Jones & A. Peters, "Cerebral Cortex. Vol. 6 [Further Aspects of Cortical Function, including Hippocampus]". New York / London 1987: Plenum Press).
135. Rudolph, Wolfgang & P. Tschohl: "Systematische Anthropologie". Stuttgart 1977: W. Fink [UTB].
136. Russell, Bertrand: "The Conquest of Happiness". London 1971 (first 1930): Allen & Unwin.

137. Saader, M.: “Kleine Fibel zur Hochschuldidaktik”. München 1977: Beck.
138. Sakata, H. & A. Mikami & J.M. Fuster (Eds.): “The Association Cortex. Structure and Function”. Amsterdam 1997: Harwood Academ. Publ.
139. Schank, Roger C. & R.P. Abelson: “Scripts, Plans, Goals, and Understanding. An Inquiry into Human Knowledge Structures”. Hillsdale, N.J. 1977: Lawrence Erlbaum.
140. Schank, Roger C. & K.M. Colby (Eds.): “Computer Models of Thought and Language”. San Francisco 1973: W.H. Freeman.
141. Scheffler, Harold: “Kinship, Descent and Alliance” (in: J. Honigmann (Ed.), “Handbook of Social and Cultural Anthropology”, Chicago 1973: Rand McNally).
142. Schrader, Reiner: “In der Papiertür Löchlein der ganze Himmelsstrom. Klassische Haikus von Basho, Buson, Issa und Shiki”. Hamburg 1996: Wayasbah.
143. Schultz, Wolfram & Tremblay, L. & Hollerman, J.R. & Mirenowicz, J.: “Delayed Responding and Reward Signals: Neurons Coding Component Processes of Goal-Directed Behavior in Primate Basal Ganglia and Orbitofrontal Cortex” (in: H. Sakata et al 1997: 67ff.).
144. Self, David & E.J. Nestler: “Molecular Mechanisms of Drug Reinforcement and Addiction” (in: Ann. Rev. Neurosc. 1995, Vol. 18: 463-495).
145. Selye, Hans: “The Stress Concept and some of its Implications” (in: Hamilton & Warburton 1979).
146. Sen, Amartya: “Development as Freedom”. Oxford 1999: Oxford University Press.
147. Sidler, N.: “Zur Universalität des Inzesttabu”. Stuttgart 1971: F. Enke.
148. Silbernagl, Stefan & A. Despopoulos, “Taschenatlas der Physiologie”, Stuttgart 1991 (4. Aufl.): Thieme.
149. Singer, Wolf: “Synchronization of Cortical Activity and its Putative Role in Information Processing and Learning” (in: Annu. Rev. Physiol. 1993/55:349-374).
150. Snyder, Martha & R. Snyder & R. Snyder: “The Young Child as a Person”. New York 1980: Human Sciences Press.
151. Sokolov, Evgenii: “Perception and the Conditioned Reflex”. New York 1964: McMillan (also: Pergamon Press).
152. Solomon, Eldra Pearl & L.R. Berg & D.W. Martin & C. Villee: “Biology”. Fort Worth / Philadelphia / London 1996 (4th ed.): Saunders College Publishing.
153. Spender, Stephen: “The Making of a Poem” (in: P.E. Vernon (Ed.), “Creativity. Selected Readings”. Harmondsworth 1970 (first 1952): Penguin Books Ltd.
154. Stachowiak, Herbert: “Denken und Erkennen im kybernetischen Modell”. Berlin / Heidelberg 1969: J. Springer-Verlag.
155. Stegmüller, Wolfgang: “Wissenschaftliche Erklärung und Begründung (= Probleme und Resultate der Wissenschaftstheorie und Analytischen Philosophie, Bd.1)”. Berlin / Heidelberg / New York 1969: Springer-Verlag.
156. Stegmüller, Wolfgang: “Hauptströmungen der Gegenwartsphilosophie”, Bd. II. München 1979: Kröner Verlag.
157. Steinbuch, Karl: “Automat und Mensch”. Berlin & Heidelberg 1966: Springer-Verlag.
158. Stillings, Neil et al: “Cognitive Science. An Introduction”. Cambridge, MA 1989: MIT Press.
159. Stuart, Edward & C. Kioussi & P. Gruss: “Mammalian PAX Genes” (in: Annu. Rev. Genet. 1993:319-236).
160. Swanson, L.W.: “The Anatomical Organization of Septo-Hippocampal Projections” (in: L. Weiskrantz (Ed.), “Functions of the Septo-Hippocampal System”, S.25ff. Ciba-Symposium, No. 189 [*or:* 58]. Amsterdam 1978: Elsevier).
161. Tomkins, Sylvan: “Affect, Imagery and Consciousness”. 4 Vol. New York I:1962/ II:1963, III/IV:1991: Springer.

162. Tomkins, Sylvan: “Script Theory: Differential Magnification of Affects” (in: Nebraska Symposium on Motivation 1978, „Human Emotion“, Vol. 26:201-236 [H. Howe & R. Dienstbier (Eds.)]. Lincoln 1979: University of Nebraska Press).
163. Vernon, P.E., “Creativity. Selected Readings”. Harmondsworth 1970 and 1973: Penguin Books. Cf. S. Spender; C.R. Rogers.
164. Vinogradova, Olga: “Functional Organization of the Limbic System in Registration of Information. Facts and Hypotheses” (in: Robert L. Isaacson & K. Pribram (Eds.), “The Hippocampus”, Vol. 2:3-70. New York 1975: Plenum Press). *See also Weiskrantz.*
165. Vinogradova, Olga: “Expression, Control, and Probable Functional Significance of the Neuronal Theta-Rhythm” (in: Progr. Neurobiol. 45/1995:523-583).
166. Vogel, Günter & H. Angermann: “dtv-Atlas zur Biologie. Tafeln und Texte. I-III”. München 1992 (7. Aufl.): dtv.
167. Vogt, Brent & M. Gabriel (Eds.): “Neurobiology of Cingulate Cortex and Limbic Thalamus: A Comprehensive Handbook”. Boston 1993: Birkhäuser.
168. Warburton, D.M.: “Physiological Aspects of Information Processing and Stress” (in: Hamilton & Warburton 1979).
169. Weiskrantz, L. (Ed.), “Functions of the Septo-Hippocampal System”, S.25ff. Ciba-Symposium, No. 189 [*or:* 58]. Amsterdam 1978: Elsevier. [*contains:* “Comments” by Vinogradova, Azmitia, etc.]
170. Whiting, John & I. Child & W. Lambert: “Field Guide for a Study of Socialization”. New York 1966: John Wiley.
171. Wieser, Heinz G.: “Behavioural Consequences of Temporal Lobe Resections” (in: M.R. Trimble & T.G. Bolwig (Eds.), “The Temporal Lobes and the Limbic System”. 1992: Wrightson Biomedical Publishing Ltd.).
172. Wilkens, W.K. & J. Wakefield: “Brain, Evolution and Neurolinguistic Preconditions” (in: Behav. & Brain Sciences 1995/ 18: 161 ff.).
173. Witter, M.P. & H.J. Groenewegen & F.H. Lopes da Silva & A. H. M. Lohmann: “Functional Organization of the Extrinsic and Intrinsic Circuitry of the Parahippocampal Region” (in: Progress in Neurobiology, 1989, Vol. 33:161-253).
174. Wright, G.H. von: “Explanation and Understanding”. London 1971: Routledge & Kegan.
175. Wright, G.H. von: “Freedom and Determination” (in: Acta Philosophica Fennica. Vol. 31,1. Amsterdam 1980: North-Holland Publ.).
176. Wright, G.H. von: “Theory of Human Welfare” (in: P.A. Schilpp (Ed.), “The Philosophy of Georg Henrik von Wright” [Library of Living Philosophers], La Salle, IL.1989: Open Court).
177. Yamadori, A.: “Body Awareness and its Disorders” (in: M. Ito & Miyashita & E. Rolls (Eds.), “Cognition, Computation and Consciousness”. Oxford 1997: Oxford Press).
178. Yeterian, Edward & D. Pandya: “Architectonics of the Primate Brain” (in: H.J. Markowitsch (Ed.), “Information Processing by the Brain”. Bern 1988: Hans Huber Publishers).
179. Zbinden, Hans: “Das Gewissen”. Zürich 1958: Rascher-Verlag.

Addenda:

180. Lyons, John: “Theoretical Linguistics”. Cambridge 1968: Cambridge University Press.
181. Wright, G.H. von: “Norm and Action. A Logical Inquiry”. London 1963: Routledge & Kegan Paul.

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Dedicatory illustration[*]

Codex Fejérváry-Mayer, 16, p.43 above

Pictorial manuscript of divinations and rituals. Prehispanic, southern Mexico.

Free Public Museum, Liverpool. In terms of contents, the relation to life decision, intervening action and existential interpretation is considered to be well-established.

Cf. Karl A. Nowotny, "Tlacuilolli", Gebr. Mann Verlag, Berlin 1961:272/273, and his interpretation, p. 43:

"Codex Fejérváry-Mayer, 16, p. 43 o (§22) / Table of sacrifice for a ceremony of trekking merchants, carried out at a cross-road.

We are dealing with one of those rituals which only have become comprehensible by Schultze Jena's ethnographical report... [Indiana, Vol. III, 1938; E.H.] (see S. 272). On this page, three bundles of firewood and 44 bundles, each composed of 5 sacrificial offerings tied together (flowers, reed stems, or the like), are needed [not shown, E.H.]. The bundles have to be offered as specified in the manuscript in order to become effective. A further bundle of 11 pieces is placed aside. In analogy to living customs, it might serve in equilibrating mistakes when counting [the bundles]. The day for the ritual, 1 V Snake, is the most propitious day for merchants. The hands showing the way might relate to the choice of the correct travel route." Cf. Nowotny 1961, plate 46B.

With regards to 1 Snake (V) cf. Eike Hinz, "Analysis of Aztec systems of thought" (Frankfurt: F. Steiner, 1978) and Eike Hinz, "Persuasio ad bellum modo antiquo. An Aztec speech of warfare" (in: "Mesoamerican studies as social science", Hamburg: Wayasbah-Verlag., 2002: 164) [both in German].

1 Snake (V) is the day for the declaration of war, or the day of departure of the long-distance trading merchants, also in their role as participants in warfare.

One route of the cross-road is represented in blue, the other route is reddish. I propose the hypothesis, to interpret the blue route verbally as *'atl'* (= water), the other route as *'tlachinolli'* (= fire). The coupling *'atl tlachinolli',* an Aztec metaphor, signifies "combat" or "war" *(Atl, tlachinolli. Batalla o guerra. Metapho.* [Molina, "Vocabulario de la lengua mexicana y castellana"; Mexico 1571:8v, Casa Antonio de Spinosa]; *ATL TLACHINOLLI. Guerre, bataille.* [Rémi Siméon, "Dictionnaire de la langue nahuatl ou mexicaine", Graz 1963:33, Akademische Druck- u. Verlagsanstalt]; *TLACHINOLLI,* adj. et s.v. *Brulé, incendié* [Siméon, p. 513]). The language need not be necessarily Aztec. There is a basic stock of metaphoric couplings common to all of Mesoamerica ('difrasismo' according to Garibay; dvandva-like couplings as in Sanskrit according to Höltker), independent of language, or superordinated to individual languages, i.e. *conceptually* matching.

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[*] Due to excessive slide and permission fees and double-bind requirements publicized by the British Government I opted for the reproduction of a redrawing by myself based upon Eduard Seler's commented redrawing [published in his English version of his "Commentary" on the Codex Fejérváry-Mayer] and Karl A. Nowotny's redrawing and reconstruction in his book mentioned here. I express my hope that the study of ancient Mexican cultures will continue to flourish despite the difficulties imposed (e.g., the abandonment of the research program of 'Ancient American Languages and Cultures' in the University of Hamburg) and that the Mexican people will benefit from this type of research (despite all of the high prices, incl. this book). The vignette captures the *representation of consciousness* in a unique form: decision-making embedded into the framework of the 260-day calendar of divination. Bernardino de Sahagun's Aztec texts may hold the key to interpretation.

O(TLA)MAXALLI = cross-road. Cf. MAXALIUHTICA. Être indifférent, indéterminé [Siméon, p.236]; MAXALOA. Nitla. Apartarse de un camino para seguir otro [Molina, p. 54v].

Note: There seems to be no "semantic marker or determiner" of offerings depicted in the manuscript. The meaning of the temporal (and divination) structure associated with the cross-road and its four day signs is unclear. The representation might refer to temporal periods recorded according to the 260-day divination calendar. The meaning of the hand gestures remains to be elucidated.

The following redrawing is adapted from a redrawing by Eduard Seler: "Codex Fejérváry-Mayer. An Old Mexican Picture Manuscript in the Liverpool Free Public Museums (12014 / M). Elucidated by Dr. Eduard Seler. Berlin & London 1901-1902. Printed by T. & A. Constable, (late) Printers to Her Majesty at the Edinburgh University Press". I follow Nowotny's interpretation and reconstruction. Correspondingly, some of Seler's commentary has been omitted. The interested reader is referred to the facsimile edition published by Akademische Druck- und Verlagsanstalt (ADEVA), Graz, Austria.

[Fig . to be inserted]

Personal note: As an *alternative*, I considered the South Korean flag as a dedicatory vignette. I find the official interpretation of the cosmological significance of the symbolism of the flag to be thought-provoking and hope-inspiring. Cf. „Tatsachen über Korea" ("Dynamic Korea"), Seoul, 2005:31.