

III. SELF-ORGANIZING ENDO-MATTER, THE INTERACTIVE INTERFACE AND COMMUNICATION

the recurrent organization of the human system leads to involvement and commitment in 4 basic types of relation

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Abstract:

Within the context of a recently developed neuro-motor theory, we have defined the human being as a self-organizing endo-system in connection with its pre-selected exo-world. During evolutionary processes, living endo-systems have developed value-bearing genotypic endo-standards which contain(ed) reference functions and which enable(d) these systems to search for existence-confirming relations within their pre-selected exo-world. At the neuro- and psychobiological level we have described relations in terms of SH.I.C.-processes: effector-mediated **(SH)aping**: a mode of action which enables the endo system to express specific parts of its identity, **(I)nterfacing**: resulting from shaping and establishing encounters with the pre-selected exo-world in a flexible way, and **(C)ountershaping**: a mode of action through which the endo-system is able to take in and to represent in its endo-world the value-bearing exo-located interface with the exo-world.

SH.I.C.-processes are produced by the endo-system. They 'centre' that endo-system. They induce either short-looping behaviour, directly relating the endo-system to itself or long-looping behaviour, indirectly relating the endo-system to itself via a pre-selected part of the exo-world. Value-bearing short-looping and long-looping behaviour is represented in the systems' endo-world: the neuro-psychic domain. Short-looping behaviour is related to the participating sub-self, long-looping behaviour to the observing sub-self. The adjustable balance between the short-loop related participating sub-self and the long-loop related observing sub-self is controlled by neuro-psychic meta-levels that realize the systems' overviewing sub-Self.

The activation of reference-functions of endo-located endo-standards is directly related to value-bearing, exo-located SH.I.C.-processes. These processes enable the human endo-system to develop four types of relations. They arise from four **relational periods**. The centre of these periods is the actual human endo-system, embedded in a relational network in the exo-world. As the meaning, 'colour' and value of these periods are developed during child-life, they continue to have their impact in the actual adult context of relations in the family, in friendship, during game-playing social events, during the work and in connection with the media.

I. INTRODUCTION

I.a. interactive values and endo-standards

We live in an epoch in which the development of communication and of psycho-therapy increasingly contributes to more precise explanations and predictions about goal-directed and context-dependent human behaviour. As we are gradually more able to observe and to understand how subconscious processes, 'colour' relations of interacting and communicating humans, we in this study aim to further explore how the inner world of a person relates to his outer world.

We define a person as an individual human endo-system, surrounded by its limiting border, i.e. by its skin and sensory surface. Based on drives from geno- and phenotypic value-bearing endo-standards the system-border separates the endo-system from, and connects it with, exo-values. Separation and connection are achieved by goal-directed and flexible shifts of matter and energy (l.c.; Wassenaar et al. (1995), this volume). These shifts coincide with either impression or expression of interactive values. The term value and/or meaning reflects the activity of reference-functions of endo-standards, which enable the system to discriminate between life-confirming or -denying exo-values. When endo-standards process matter- and energy- related meaning about the confirmation or denial of its existence, the endo-system is able to maintain its once achieved identity. Assisted by its endo-standards, the endo-system 'registers', 'measures' and 'compares' exo-values in relation to its endo-values. Genotype related endo-standards arise from the DNA-RNA network, i.e. from genotypic, evolutionary, that is interactive, memory (Wassenaar, 1994 b.). Phenotype related endo-standards arise from early experiences about interactions between endo-system and exo-system. Both geno- and phenotype related endo-standards contain endo-values and reference functions from where drives arise.

When a given endo-system expresses interactive genotype-driven endo-values, it temporary connects its genotypic endo-standard to a pre-selected exo-world. In aiming to obtain satisfaction of its genotype-driven values, meaning-bearing information is sent out and taken in by the endo-system. Between two or more endo-

systems the exchange of endo-values will lead to relation-formation. In section IV.c. we will present a list of 9 steps which describe the main characteristics of such formation process.

I.b. aim of this study: two concepts about relations

In using some basic elements of communication and psychotherapy developed in the Pessó-Boyden group (Pessó and Wassenaar, 1991), in the school for transactional analysis (Berne, 1963; James and Jongeward, 1971) and in the communication-exploring Watzlawick group (Watzlawick et al., 1967, 1978), we aim to integrate the Neuro-motor concept of Wassenaar (section III.) and the Four-Circle concept of Schut (section V.).

I.b.1. The Neuro-motor concept represents an interdisciplinary approach which contributes to a further clarification of the experiencing and behaving human being. Wassenaar relates in that approach:

- the ancient dichotomy between neuro-organic and psycho-organic phenomena with
- the endo-exo paradigm, originally developed in theoretical physics by Rössler (vz. 1994), by Primas (viz. 1994) and by Atmanspacher (viz. 1994), with
- a shape-countershape metaphor used in the psychotherapeutic practice and related to the theory of the Pessó-Boyden group (Pessó, 1969, 1973, 1991), and with
- the paradigm of self-organization (Maturana and Varela, 1986; Dalenoort, 1989, 1994).

I.b.2. With his Four-Circle concept, Schut (section V.; 1991) demonstrates how the human endo-system is an actual centre in a relational network in the exo-world. The actual centre is surrounded and affected by four types of relations, which are represented in the systems' neuro-psycho domain. In order to clarify and to visualize these four types of relations, the concept describes four concentric circles.

In section IV. we will present the connecting bridge between re-looping phenomena described in the Neuro-motor concept (section III.) and the Four-Circle concept described in section V. The result of this integrating process is presented in section VI., resulting in (section VII.) where we will find a description of a general approach toward relational issues.

I.c. the object/subject dichotomy and the endo/exo dichotomy

We mentioned in section I.a. that living endo-systems are ruled by their geno- and later on phenotypic value-bearing endo-standards. These endo-standards contain reference functions, by which they realize drives which directly relate the system-border of the endo-system to its pre-selected exo-world.

Traditionally, the issue of separation and connection is one of the main topics of the object/subject dichotomy, thoroughly described in classic psychotherapeutic theory (Winnicott, 1986 pp. 53-58). However, this 'classic' dichotomy strongly coincides with the endo-exo dichotomy. As this latter dichotomy realizes

itself at all levels of the matter-inherent organization of the human endo-system (Wassenaar, 1994 b.), we will not use the term object/subject dichotomy, we prefer the term endo-exo dichotomy instead.

In stating that mental-psychic properties originate from the interactive complexity at all levels of organization in the human endo-system, the choice for the term endo-exo dichotomy may lead to new discussions in the psychoanalytic and psychotherapeutic realm.

The Pessó-Boyden group (Pessó, 1991) describes the developing just-born child as experiencing itself as the central participant in an unlimited reality. In that unlimited reality, the parenting environment offers the child a life-confirming intimacy in its non-chosen, non-voluntary world. Based on its value-processing genotypic endo-standards, the just-born child firstly experiences the skin- and sensor- touching quality of its environment with unlimited trust and expectations. Supported by the experience of being wellcome, it expresses its needs, wishes and volitions, i.e. its endo-values in a parenting environment that becomes gradually limiting and limited.

When, with growing age, the child's endo-exo reality becomes increasingly more experienced by the child as a limiting reality, the child starts to experience the exo-world as being different from its own experiencing endo-world (viz. Hartman, 1991; Broadbent, 1958). Then, the child starts to realize its participating sub-self and its observing sub-self (section IV.b.).

The Pessó-approach (Pessó, 1969, 1973, 1991) 'places' memories of the adult client via the memory-rewinding, body-mind related, technique of accomodation back in the

former experienced and now re-lived childhood, including the life-denying aspects of the early symbol- and value-bearing, parenting exo-world. Being in its world of early experiences again, the client can now replace former life-denying interactions by life-confirming ones. Autonomy appears then to be interdependent autonomy, which can only be achieved through interactions with and within a safe and intimate parenting and social surrounding. The Pessó-group invented their Psychomotor -theory and -practice based on how clients experience the fullness of existence through their growing interdependent autonomy.

II. SYSTEM CHARACTERISTICS

II.a. 'neutral' exo-locations lead to communicative positions

II.a.1. From a strict theoretical point of view, each autonomous endo-system starts to exist without an observer in the exo-world. Such an endo-system does not primarily need an external observer as a condition for its existence. It starts to exist in a 'neutralized' non-interacting, non-communicating exo-location (Gernert, 1994; De Kampis, 1991, 1994).

It contains a maximal amount of degrees of freedom, coinciding with an optimal potential to achieve interactions with a pre-selected exo-part (Wassenaar et al. (1995), this volume). When it starts to self-organize interactions with and within the exo reality, the amount of degrees of freedom will decrease: its exo-location becomes an interactive location, where degrees of goal-directedness will increase. Let's consider the systems A. and B.

II.a.2. When endo-system A. arrives in the surrounding of endo-system B. and v.v., exo-locations of endo-systems become mutual interactive locations. Then both endo-systems start to reduce their amount of degrees of freedom together with an ongoing development of a mutual vector of goal-directedness. Then, interactive locations become interactive positions. Communication is still not present.

II.a.3. In order to exchange identifiable values, A. and B. will start a try-out by shifting their system-borders - and hence to transmit information - in a shared part of the mutual experienced exo-space. When in that exo-space of interfacing mutuality (Fig.2.), values are exchanged between the two interactive positions, communications will arise. Such a development coincides with a further decrease of degrees of freedom. When communications arise, interactive positions become communicative positions. When communications between A. and B. are finished, A. and B. 'step back' in their interactive positions, sometimes 'back' in their interactive locations. In the endo-system as well as in the exo-world, traces of previously achieved interactions will remain as a continuous signal of remembrance of having once achieved a relation. Hence, the two endo-systems can never return to the stage of 'neutral' exo-location with their maximal amount of degrees of freedom.

Example of the field and the football game: Just before the whistle of the arbiter makes its first sound: '**start your game**', we find the players to be in their interactive positions on the field. After the first sound of

the whistle, players start to move, i.e. start to shift their identifiable borders in exo-space. From time to time they receive, game-related remarks or the ball from another player. Then communications will arise. Players who communicate with one another, are in communicative position. After a while they just move or rest, without communication. Then they are back in interactive position.

When specific clusters of goal-directed messages are exchanged between two or more participating endo-systems, such systems will convert their interactive positions into communicative positions.

II.b. the capability to identify with exo-values; autonomy and autonomous behaviour

Through its self-organizing capacity each living endo-system uses its matter-inherent endo-organization - in terms of endo-standards - to strive for autonomy. One of the fundamental characteristics of autonomy is the capability to voluntary identify with exo-values in terms of matter- and energy- related information. Hence, the potential to 'identify-with' indicates the order and quality of recognition by value-exchanging endo-systems.

As one of the primary system-characteristics of living endo-systems is the inevitable necessity to manifest interactive autonomy, each living endo-system will continuously produce autonomous behaviour by its interactions.

Then relations will be realized. The production of autonomous behaviour coincides with information flows, which are sent out and 'shaped' (III.b.1.) into a specific part of the systems' pre-selected exo-world. (Csikzentmihalyi, 1990, 1993). These flows realize interactive encounters with that exo-part. Information about the endo-exo encounter - or interactive interface (III.b.2.) - is receptively taken in by the countershaping (III.b.3.) endo-world of the system. Assisted by its autonomous behaviour, each living endo-system is able to shape its identity in relation to a pre-selected 'best fitting' and life-confirming exo-world.

II.c. re-looping or recurrent information

In discussing the communicative aspect of relations in general, Morgan (1986) stated: 'no-lines- but loops, indicating that a dynamic endo-system relates to value-bearing information from the outside world.

As perturbations, both from the inside and from the outside of the living endo-system, continuously 'attack' such a system, the perturbing effects are diminished through homeostasis in terms of negative feed-back loops (Wassenaar et al., 1995, this volume). Then, stability and autonomous self-organizing behaviour of the endo-system will arise.

Each living endo-system maintains stable physiological levels by using set-points and negative feedback loops executed by its specific sub-systems.

Our term: 're-looping-of-information' points at a specific quantity of degrees of freedom, which are used during, and which are involved with re-looping and/or interfacing behaviour.

Negative feedback loops diminish quantities of degrees of freedom, positive feedback loops enhance the quantity of degrees of freedom. In other words, both positive and negative feedback loops are specific forms or specific examples of interfacing behaviour.

III. THE NEURO-MOTOR CONCEPT OF WASSENAAR

III.a. the principle of recurrent causality; 'best fitting' and 'best matching'

The interactive capacity of the complete human endo-system has been explored both in a 'bottom up' and in a 'top down' fashion by Wassenaar (1994, b.) and Wassenaar et al.(1994 a, 1995, this volume). He found a **principle of recurrent causality**, which he claimed to be the evolution-related principle of self-organization. According to Angyal(1974), he denoted this principle the **unitas multiplex**, ruling interactive existence of all living endo-systems. Through that principle, each endo-system relies on the interactive positions between its constituents at levels of rather low complexity, such as ionic and synaptic configurations, up to considerably complexified organs and neuronal nets. Through that principle the conditions are created for interactive positions between the entire endo-system and its pre-selected exo-world. As that principle underlies the physical integrity of all levels of organization in the endo-system, these levels, including the endo-system itself, constitute recurrent flows of value-containing endo- to exo-information (Wassenaar et al.,1995, this volume; Csikzentmihalyi, 1990, 1993).

The core terms 'best fitting' and 'best matching' can be described as follows:

The value-bearing endo-system continuously realizes **interactive interfaces** in exo-location (III.b.2.), which are '**best fitting**' encounters between

- matter- and energy- bound endo-values, arising from endo-standards and
- matter- and energy- bound exo-values arising from the pre-selected outside world.

The term '**best matching**' refers to the systems' 'registering' and 'comparing' endo-standards through which the endo-system can experience the represented actual interface as being correctly 'matched' with previously established interfaces, represented in the neuro-psychic domain. As 'best matching' processes

enable the endo-system to recognize actual interfaces, recognitions enable the endo-system to make new choices by which it will continue its self-chosen routes in life.

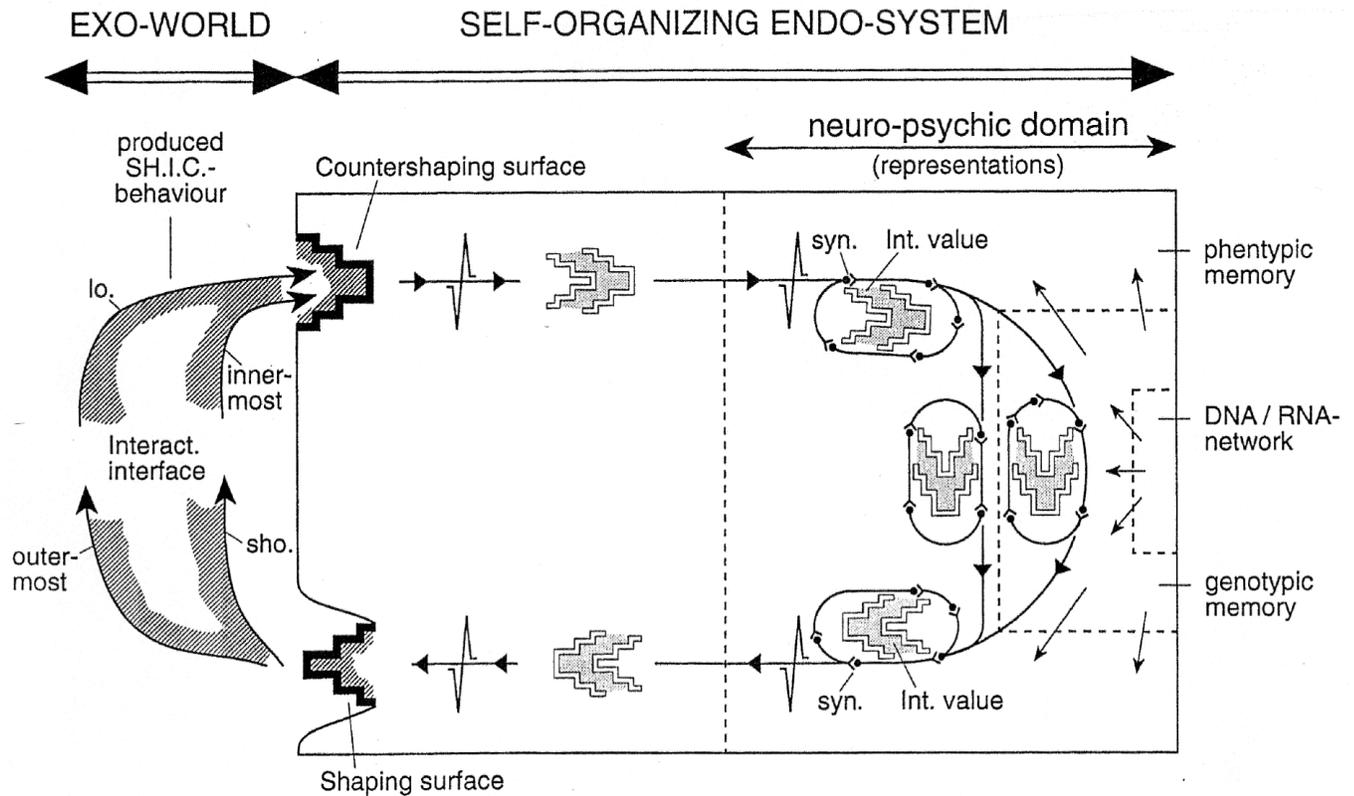


Fig.1. A living endo-system is characterized by exo-located flows of (SH)aping, (I)nterfacing and (C)ountershaping-information. The endo-system searches for 'best fitting' exo-located encounters with the pre-selected exo-world by innermost short (sho.)- and outermost long (lo.)- looping SH.I.C.-processes. This leads to value-bearing Interactive Interfaces (III.b.2.). When the Countershaping sensorial surface extracts Interface information from the pre-selected exo-world, this value-bearing information (Int.value) is 'matched' with previous interfaces and represented in geno- and phenotypic memory. That 'best matching' memory consists of previously established interfaces, by which actual interfaces are recognized and 'coloured'. The endo-representations of shaping and countershaping exo-parts arise from the exo-located interface (shaded area). The interactive, value-bearing shaded area between innermost and outermost SH.I.C.-processes is represented in the neuro-psyhic domain. Each interface representation is presented as an ellipse of neuronal-synaptic re-looping turns of interactive information. Interface-representations still include the exo-located SHaping- Interfacing-Countershaping environmental reality. The Interface value of each representation is dependent on the combination of exo- and endo- values and on synaptic processes (syn) , including the way these processes can be affected by drugs.

III.b. (SH)aping expressivity, (I)nterfacing encounters and (C)ountershaping receptivity constitute re-looping SH.I.C.-processes

As human endo-systems self-organize pre-selected, meaning-bearing interdependent relations, the Neuro-motor concept describes how three implicitly related sequential modes of actions enable the human endo-system to selectively take in combinations of exo- and endo- values, i.e. to take in information about interactive interfaces. These modes of action are:

- 1- **SHaping.** SHaping is an effector mediated selective and goal-directed process, by which the endo-system is able to express information about its content-related identity. The information is expressed toward a preselected value-bearing part of the exo-world.
- 2- **Interfacing.** Interfacing continuously results from goal-directed SHaping, leading to the actual dynamic, adjustable and shaped encounter between the human endo-system and its 'best fitting' preselected exo-world. That encounter was described by Wassenaar with the term interactive interface (Wassenaar and Pessa, 1989). The interface is realized in exo-location, whilst it is represented in the neuro-psyche domain in endo-location, i.e. in 'best matching' memory (III.a.).
- 3- **Countershaping.** Countershaping is a selective sensor-mediated process. By that receptive process, meaning-bearing interface-information is continuously taken in and transferred to 'best matching' memory in the neuro-psyche domain. Systems' endo-capacity to selectively attend to actual pre-selected 'best-fitting' interfaces in relation to previously established 'best matching' interfaces (III.a.) lead to recognition of the actual interfaces. The system continuously transforms information of actual interfaces into information of past interfaces. Then new memory is constituted.

In conclusion: Relations are exclusively constituted by value-bearing (SH)aping - (I)nterfacing - (C)ountershaping, i.e. by SH.I.C.-processes. The Countershaping part (III.b.3.) of these processes enables the human endo-system to take in information about the Interfacing (III.b.2.) or value-bearing, endo-exo reality. After having processed this endo-exo information, goal-directed endo-values will be expressed into the pre-selected exo-world by the endo-system, which will then use its SHaping potential (III.b.1.) within flows of SH.I.C.-processes.

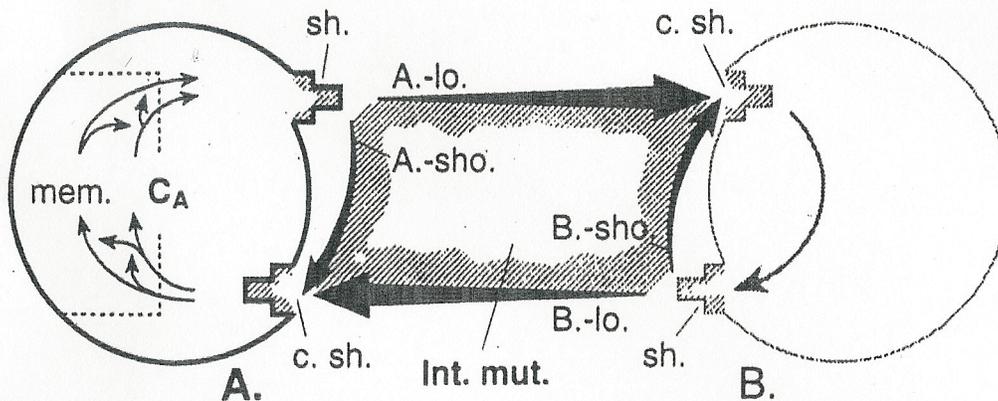


Fig.2. Innermost short (sho.)- and outermost long (lo.)- looping SH.I.C.-processes of endo-system A. with center C_A , realize two types of behaviour (c.f. III.d.), which relate to each other as if they are two separate exo-systems produced by A. After a while the information of the two exo-systems is taken in by A. As the two innermost and outermost re-looping 'exo-systems' differ in exo-location both types are represented in the neuro-psyche domain including their differences in distance. As time is a derivative of distance, the representation of differences of distance will lead to representations of differences in time. As the consciousness is related to representations of differences in distance and consequently in time, we hypothesize that these representations evoke interactive consciousness (c.f. III.d.e.). Abbrev.: Int.mut.: interfacing mutuality; sh.:shaping; c.sh.: countershaping; mem: memory.

III.c. the human endo-system and three space-time domains

Within a pre-selected and restricted context of an actual 'best fitting' interfacing reality, the human endo-system has access to its 'best matching' past (III.a.). Such a past is 'past actuality', consisting of previously established interactive interfaces.

Then recognition of actual interfaces is realized. The human endo-system will then experience how its autonomy is related to expectations about its future, i.e. about its virtual actuality. Here we touch upon the remaining but fundamental question how three interconnected time-domains, past (memories), present (actuality) and future (expectations) play their roles during the actualization of relations within a consciousness producing scenario.

III.d. the human endo-system and SH.I.C.-processes of short- and long-looping behaviour

As SH.I.C.-processes (III.b.) originate from geno- and phenotypic endo-standards (I.a.), the human endo-system is able to interact and communicate in a meaningful way with its pre-selected exo-world. Through these processes, the human endo-system continuously centres itself in relation to itself and to that world.

We will here shortly describe the dual organization of these processes (viz. Wassenaar et al., 1995, this volume.):

-1- short-looping SH.I.C.-processes realize short-looping behaviour by which information is transmitted about the centring endo-system in direct relation to itself. Short-looping SH.I.C.-processes constitute the endo-directed innermost limitation of the interactive interface (Fig.1.,2.). Short-looping behaviour connects the systems' experiencing endo-world with its innermost, skin-and sensor related adjacent outside of the pre-selected exo-world. Short-looping behaviour centres the endo-system to process functional endo-values within the adjacent, physical environment. Short-looping processes are primarily related to the participating sub-self, arising from geno- then from phenotypic endo-standards.

-2- long-looping SH.I.C.-processes arise primarily from short-looping processes. Long-looping information is mainly derived from phenotypic, or associated pheno- phenotypic information. The various forms of long-looping information are related to the expressed meaning of the exo-world about the shaping, interfacing and countershaping endo-system. Long-looping processes realize long-looping behaviour. The processes contain exo-values about the short-looping endo-system. The short-looping, centring endo-system will process functional endo-values in relation to the exo-values in the outside world. Long-looping SH.I.C.-processes constitute the outermost limitation of the interactive interface (Fig.1., 2.). Long-looping processes are primarily related to the observing sub-self arising from pheno- and pheno-phenotypic endo-standards.

III.e. In summary: re-current autonomy, communications and short-and

long-looping SH.I.C.-processes; the capacity to 'recognize' and interactive consciousness

We have presented the basic mechanisms of communication between two or more endo-systems.

Communication is defined in terms of future-directed, recurrent SH.I.C.-flows of interactive information.

During an intense communicative process, i.e. during a

selectively attended high rate of exchanged information between two endo-systems, the packing density of recurrent turns in the coil of communication is high (Wassenaar et al.,1995, this volume). Non-intense processes are related to loosely packed turns in that coil because selective attention of one or of both systems easily fades away.

During the development of the young human endo-system, processes of short-looping behaviour will gradually lead to self-organizing long-looping behaviour. As described in Wassenaar et al.(1995, this volume) the distinction between innermost short- and outermost long-looping behaviour coincides with the separated representation of the two types of behaviour in the neuro-psycho domain.

As mentioned before, re-activation of previously established 'best matching' inter-faces by actual ones, lead to recognition of these value-bearing actual interfaces. Due to arguments used by Wassenaar et al. (1995, this volume) the systems' capacity to recognize interface-values can possibly be explained by the distinct representations of innermost short- and outermost long- looping behaviour. As recognition and consciousness are interrelated and as innermost and outermost representations are realized by two functional differing sub-domains in the neuropsychic domain, we hypothesize that this functional split of representations will lead to interactive consciousness .

IV. THE BRIDGE WHICH CONNECTS THE NEURO-MOTOR CONCEPT WITH THE FOUR-CIRCLE CONCEPT

IV.a. from Neuro-motor elements to Four Circle elements

Core-elements of the Neuro-motor concept, just described (III.) and core-elements of the Four-Circle concept of Schut, to be described (V.), leads us to the central theme of this study: the development of recurrent SH.I.C.-processes within four types of relations. The bridge between the two concepts requires the next overview:

-1- digital aspects of communication

Digital communication is rich in syntaxis and content. Combinations of codes, symbols,

letters and marks lead to configurations which determine the 'objective' meaning of the message (Watzlawick et al., 1967, pp. 60-67; IV.c.). The digital aspect of information transfer is to provide communicating systems with an unequivocal amount of information about goals and about the content of exchanged messages.

Digital language does not implicitly provide information about the experienced nature of relational issues such as involvement and commitment. Here 'subjective' meaning is exchanged along analogic routes:

-2- analogic aspects of communication

Analogic communication is expressed by non-verbal, body-related movements and postures in which digitally communicated messages are embedded (Watzlawick et al., 1967, pp.60-67; IV.c.). Analogic language reflects how human emotions and intentions are related to life-confirming and life-denying qualities.

Analogic communications reflect emotions and intentions related to involvement and commitment.

IV.b. the observing and participating endo-system;

In each relation the human endo-system 'takes' either the sub-self position of participant or the sub-self position of observer (Wassenaar et al., 1994 a.; Wassenaar, 1995, this volume). Within that frame, a 'balancing' position arises between the next two interactive positions:

1. the participating sub-self position is directly related to un-, sub- and conscious experiences of being in its own body, 'in' the moment or 'in' the emotion. Here involvement issues arise around the 'subjectively' experienced content of the relation. In a functional value-directed sense, these issues are directly related to sets of analogic communications, realized by short-looping SH.I.C.-processes. Short-looping processes are primarily related to the participating sub-self, arising from genotype from phenotypic endo-standards.
2. the observing, non-participating sub-self position arises from reflections on
 - experiences that have realized an analogic, 'subjective' and short-looping information content about the endo-exo reality and on
 - experiences that have realized a digital 'objective' long-looping information content about the exo-world in conjunction to the Self. Long-looping processes are primarily related to the observing sub-self arising from pheno- and pheno-phenotypic endo-standards.

As the centre of the Four-Circle concept is the actually behaving and experiencing human being, the balance between the participating and the observing sub-self is one of the main characteristics of the concept. .

During the development of the participating and observing sub-selves in the child, a neuro-psychic overviewing structure or 'pilot' (Pesso, 1991) starts to be developed as well. This overviewing structure is directly related to the two sub-selves and to clusters of phenotypic experiences. These clusters will lead to meta-functions which are partly copied by children because of their identification capabilities.

Assisted by his/her meta-functions the young human is able to overview both the participating and observing subselves in relation to these meta-functions. Both in the child and in the adult, the participating and observing sub-selves are registered, regulated and controlled by this central overviewing meta-faculty of the neuro-psychic domain.

IV.c. nine steps of relation-formation: 'agreement - involvement' issues lead to 'contract - commitment' issues

Supported by previous sections, we have learned to describe the human endo-system A. as a system that self-organizes its SH.I.C.-processes in relation to pre-selected parts of the exo-world. These processes enable him/her to relate to the exo-world, i.e. to another human endo-system B. In mentioning the sequence: interactive location, interactive position and communicative position (section II.a.1. - II.a.3.), we described how A. and B. can start to exchange values which arise from the geno- and phenotypic endo-standards of each of them.

When the communicative process between A. and B. evolves, the endo-values of A. become expressed by A. and, taken in and recognized by B., and v.v. (III.d.; Fig.2.).

Such a process coincides with time-consuming shifts of interactive positions by which

mutual confirmation values can be exchanged and communicative positions will arise.

Both A. and B. can partly, sometimes nearly completely, identify with their mutually exchanged values (II.b.). Inspired by the Watzlawick-group (Watzlawick, 1967) and by the school for transactional analysis (Berne, 1963; James and Jongeward, 1971), we distinguish the next nine steps in the process of relation formation:

1. Living systems search for the exchange of values to maintain or to increase states of matter-inherent autonomy. Their search is the search for confirmation of that autonomy. Hence, an evolving relation is interdependent; it arises from an 'autonomously' chosen interactive position (II.a.1.-II.a.3.).
2. the start of a relational process is determined by the mutual recognition and confirmation of values. When these values have a function in maintaining the existence of the endo-system within the relation we denote them as functional values. Mutual recognition of these values by the participants will lead to a further, selectively attended realization of the relational process.
3. Relation-directed, autonomous SH.I.C.-behaviour (III.b.) of the participants will lead to self-chosen interactive interfaces (II.b.), the value of which will increasingly lead to a further determination: of confirmation values, of 'weight' and of the character of the relation under consideration.
4. Agreement. Though mutual involvement can also be shared at the start of a

relation. The start of a relational period is initially experienced by each individual participant of the relation within a wide range of non-tested expectations coinciding with a high amount of degrees of freedom and characterized by intentions. Both intentions and expectations can be shaped and expressed on a mutual basis by SH.I.C.-processes of the participants in the relation. The start of a relation is based on agreements:

an agreement is the mutual confirmation of intentions within a starting relation evoked by value-bearing interactive positions of the participants in that relation

When, after an initial period of testing, expectation-values become converted into reality-values, agreements gradually are converted into contracts.

5. Contract. The transition from agreements, and related states of involvement, to contracts, and related states of commitment, coincides with voluntary chosen

obligations. As endo-standards lead to relations, obligations within the relation cannot be contradictory to the endo-standards (Berne, 1963; James and Jongeward, 1971).

A contract is the mutual confirmation about the exchange of goal-directed 'amounts' of identifiable values, evoked by interactive positions of the participants within an ongoing relation.

We distinguish five forms of contracts:

genetic contracts (V.b.1.); afterward-contracts (V.b.2.); contracts-in-advance (V.b.3.); 'as if' contracts (V.b.3.) and one-way contracts (V.b.4.).

6. The sequence: initial period, agreement and contract shows us an increasing stabilization of the relation, accompanied by continuously increasing numbers of degrees of involvement, then of commitment, coinciding with a further decrease of degrees of freedom.
7. The decrease of degrees of freedom in the evolving relation is realized by negative feed-back loops (II.c.), which process the mutual exchange of value-bearing information between participants, which function in the relational process (Watzlawick et al., 1967, pp.62, 129, 200).
8. The increase of degrees of goal-directed efficacy, and of stability coincides with a higher predictability of relational issues and with a higher amount of tested expectations, i.e. of reality-values.
9. When a relation becomes increasingly demarcated by recognizable values and norms, recognition of that demarcation occurs both by the inside (relational participants) and by the outside (observers in the outside world). When the recognizable demarcation 'border' has become rather stable, the relation will gradually start to relate to other relations.

Then, the systems' relational network will contribute to the stability, complexity and autonomy of the original relation.

V. THE SCHUT FOUR-CIRCLE CONCEPT

V.a. the centre of four relational periods embedded in a relational network

Schuts' work (1991) has been inspired by the Watzlawick-group (Watzlawick, 1978) and by the school for transactional analysis (Berne, 1963; James and Jongeward, 1971). Hence, his Four-Circle concept touches upon many types of communicative attitudes of coöperating participants in workshops that are held in the individual, in the social-professional and in the business-governmental sector.

The core of the Four-Circle concept is the human endo-system as the nucleus, the centre of a relational network. The living and experiencing centre is the actual identity, i.e. the Self of the endo-system. It is surrounded by representations in the neuro-psycho domain of four distinguishable types of relations characterized by different types of confirmation values (V.b.1. - V.b.4.).

In order to visualize these four types of relations, the concept describes four concentric circles in which relations depend on two balances: the life-confirming/life-denying balance (I.a.) and the observer/participant-balance (IV.b.).

Both balances are represented in the neuro-psycho domain, where they are related to reference-functions of endo-standards (I.a.). These standards 'screen', 'compare', 'select' and 'realize' the values of actual inter-active interfaces in relation to previously experienced interfaces. In describing the Four Circle-concept in the next sections, we will use the term:

sub-domain as a faculty of the **neuro-psycho domain**.

V.b. THE FOUR RELATIONAL PERIODS PRESENTED AS CIRCLES

V.b.1. THE 1st CIRCLE: the genetic contract and parenting intimacy from where existence-maintaining values arise

V.b.1.a. Just before, then after birth, the growing child develops its genotype-related interactions because of the skin touching intimacy of the caring, safety-providing parenting exo-world. As the endo-values of the child - its needs such as hunger and thirst, its needs to experience protection, care and respect towards its

growing autonomy - are continuously satisfied, the child will experience basic trust of the exo-world, because it experiences its being accepted unconditionally in an unpredictable, time-independent reality.

Within such a life-confirming environment, the young human infant will gradually obtain an appropriate connection/ separation balance including the reduction of the amount of specific expectations and an increased amount of reality values (I.c.; IV.c.: 6, 7, 8).

V.b.1.b. the 'genetic contract'

As the parent-child relation is based on its genetic inheritance, relational issues are based here on a **genetic contract** (IV.c.5.). The genetic contract is the genetic reformulation of the neuro- and psycho-organic structures of the parents towards their children. All phenotypic 'contracts' are initiated, 'coloured' and developed during life because of the 'genetic contract'. The genetic reformulation is the relational, analogic and life-enduring characteristic between parent and child. The relation is involuntary.

In the 1st Circle, the highest degrees of CONFIRMATION VALUES are experienced in an unconditional context.

In this Circle, the development from child to adult is paved with confirmation values, provided by the parenting environment. These values are expressed, i.e. shaped by verbal, digital and non-verbal analogic communications of the parents and received, i.e. countershaped by the child, and v.v.. Guided by the parenting expressions, the child will gradually start to realize non-verbal and verbal expressions. The genetic contract contains one mutual objective: the parenting drives of the parents are confirmed because of their activities in guiding the child, the child benefits from the parenting care-taking environment because it increasingly experiences its growing autonomy (II.b.; III.), leading to voluntary chosen interdependent relations.

V.b.2. THE 2nd CIRCLE: first steps in autonomy; values of bilateral intimacies and afterward-contracts.

V.b.2.a. Inspired by the content and terminology of the communicative and psychotherapeutic approaches of transactional analytic theory (Berne, 1963; James

and Jongeward, 1971), we see the parenting intimacy to result in socially symbolized, playful exchanges of intimacy. These exchanges become gradually accompanied by the development of a second sub-domain that increasingly contains representations of meaning-bearing interfaces of the direct social environment. Series of 'social contracts' are derived from the 'genetic contract' (V.b.1.). Relations in the 2nd Circle begin with the same expectations as those which were experienced in the 1st Circle. When in the 2nd Circle the parenting intimacy is converted and translated into social playful intimacy the child starts to experience its

participation by receiving and giving trust. The system-inherent development of an over-viewing meta-function (IV.b.) will increasingly enable the young human endo-system to take responsibility for its own participation/observation balance (IV.b.). During that development the child's meta-functions will gradually start to control the child's endo-exo connections, directly related to the participating and observing sub-selves.

In this 2nd Circle the child starts to relate to humans which are 'free' from the genetic contract. Here it basically learns that analogic and relational contracts are binding which induces a reduction of degrees of freedom and an increase of expectation values at all sorts of intensity, involvement and commitment. New relations which are realized in the 2nd Circle are continuously threatened by the possibility of system separation, i.e. of canceling the relation.

The threat of system-separation refers also to the impossibility to take that threat into account into an agreement (IV.c.4.) or into a contract (IV.c.5.) at an analogic level. During the vital existence of the analogic and relational contract, the possibility of separation and exclusion can hardly be inserted into an agreement or contract, since such an insertion denies the implicit nature of unconditional basic trust and life-confirmation of the relation.

In the 2nd Circle, agreements between the child and members of the social environment, or between young or adult members themselves, are characterized at an analogic level (IV.a.) in a playful atmosphere by basic trust, openness, spontaneity and mutual confidentiality. Bilateral intimacy rests on equality and sincerity appealing to the mutual confirmation of autonomous behaving participants. When the developing

child starts to become aware of normative aspects of its small society, of morality and of showing life-confirming behaviour toward others, the child will voluntarily test its social world. Then, a further growing of recurrent autonomy (II.a.) takes place.

The development of bilateral intimacies, which are at first realized in all sorts of time-independent events, has its impact on all sorts of relations in adulthood.

V.b.2.b. afterward-contracts:

Again: inspired by the communicative and therapeutic approach of transactional analysis (Berne, 1963; James and Jongeward, 1971) we define analogic 'contracts' as representing an individual condition of analogic participation about a mutually experienced event that has taken place. We denote such a condition about the past event an '**afterward- contract**'. To elucidate this a bit more:

Inherent to its nature, the human endo-system searches through its relational SH.I.C.-behaviour for total completeness in self-organizing autonomy. Such a search can only be validated when the expectation value of a future event is high and unlimited by conditions, i.e. not ruled by a contract-in-advance. When a participant in the relation verbalizes his/her experiences about the former experienced event, he/she finally 'finds' or 'does not find' what was expected before.

**we denote the mutual afterward confirmation or denial
of a common experience: the afterward contract.**

Afterward contracts arise at a level of bilateral intimacy characterized by mutual openness and secrecy toward the outside world. As a contract is related to a set of conditions to be fulfilled, we have recognized that terms such as 'agreement' or 'afterward-contract' enable participants to paradoxically formulate the conditions from which they can experience unconditional, time- independent future events in terms of relational issues.

V.b.2.d. finalizing relational 'contracts'

When the separation of participants in a relation takes place, such a separation is often actualized when one of the participants experiences the decrease of degrees of freedom in the relation as being life denying.

When the decrease of degrees of freedom is accompanied by:

- a decrease of expectation values within the relation;
- an increase of expectation values toward interactive positions outside the relation;
- a continuation of expectation values within the context of the particular participant itself,

such a development parallels also often a decrease of confirmation values in the relation (IV.c.: 6, 7, 8).

Then, an increase of dis-agreements and an escalation of conflicts can arise. An escalation is an increase of oscillations of relational 'norms' by which positive feed-back loops (Morgan, 1982) and degrees of freedom are strived for to be regained. Now the original contract is opened by the option of separation.

During the process of finalizing the relation, endo-standards and expectation values are mostly kept vital: the opportunity to start a new relation with a new social entity or with a new partner under the same conditions is quite obvious.

In the 2nd Circle CONFIRMATION VALUES are experienced within a social context where afterward-contracts play predominant roles.

2nd Circle relations are social relations. 2nd Circle relations are directly related to and derived from 'genetic contract'-relations in the 1st Circle. When family language in the 1st Circle starts to become related to socializing language, both types of languages are used to achieve freely chosen exercises and game-playing experiences in the 2nd Circle (Merleau-Ponty, 1973). This holds for both, children and adults. At the edge of the 2nd Circle, developing 2nd Circle processes are accompanied by the development of consciousness through increased verbal communications.

V.b.3. THE 3rd CIRCLE: duties and obligations in education and profession; contracts-in-advance and 'as if'-contracts

V.b.3.a. When children have taken in, and still take in parenting exo-values (1st Circle) and when they also have learned to take in social exo-values (2nd Circle), this receptive, taking-in process becomes still more developed in the 3rd Circle, within a context of self-organization, observation and participation. As children are more able now to let their participating and observing sub-selves to be controlled by their over-viewing meta-functions (IV.b.) they will also increasingly be able to follow self-organized routes during their lives.

With an increased capacity to continuously overview and compare perceived endo-exo-values in relation to their endo-standards, they start to enter the domain of education and adult profession. Such a start is accompanied by a more consciously chosen use of either pre-dominant digital or pre-dominant analogic communications.

When educational and later on professional language is developed, the use of abstraction-related terms coincides with a further development of consciousness about endo-values, about non-material and material values. The 'digital' meaning of interactive interfaces in the 3rd Circle is different from the 'analogic' meaning of interfaces in the 1st and the 2nd Circles.

V.b.3.b. contracts-in-advance

During child development in the 3rd Circle, the school becomes a legitimate part of the interactive and communicative endo-exo reality. Each day shows a certain regularity in awakening, in washing and dressing, eating, going to school and learning lessons.

In the 2nd Circle agreement and afterward-contract-formation is mainly implicit during the experience of social and playful bilateral intimacies, i.e. during the experience of friendship, during playing games, in loving and in sexual relations.

In the 3rd Circle contract-formation is explicit and in advance before a person starts to act within the environment of education, function or profession.

The contracts-in advance are directly binding to participants and indirectly to persons in the context.

In the 3rd Circle, either a young or an adult human being is subjected to demands from 'social entities' in which they start to function. The demands require participants to perform adequately and to show the result of efforts to be made.

The efforts are supervised in terms of progress in the course of education, in terms of duration and in terms of functional intensity. These efforts are made in relation to the existence of a task-requiring background, stabilized by contracts-in-advance.

In childhood obligating time is often delegated to the parenting and other supervising systems in school etc. However, when the adult functioning human being has structured both its time and environment, he/she has learned

- to use matter- and energy- related information in order
- to produce converted and new matter- and energy- related information.

Here we deal with 'measurability' of efforts and quality-values. Measurability includes testing of performance and of tasks, which are executed or which have to be executed by SH.I.C.-processes.

Contracts-in-advance are often written contracts. A contracted person has often chosen to deal with a balance between a fixed amount of degrees of involuntariness and disciplined behaviour in relation to a tolerated amount of degrees of freedom.

As contracts-in-advance are formulated in terms of tasks and obligations, a person who requires education can then become acquainted with new responsibilities. When mixtures of involuntariness and responsibilities in the educational or professional world arise, and when correct handling of duties becomes increasingly important, self-maintaining autonomy will increase or decrease.

After school-time or work, trust-related analogic afterward-contracts with a 1st Circle- and a 2nd Circle-signature become available.

V.b.3.c. 'as if' contracts

A special form of an analogic contract is the 'as if' contract. It often plays a predominant role in our society.

The short-looping analogic, non-verbal and 'subjective' aspect of relations creates often relational rules, which are provided by participants 'as if' these rules are 'derived' from a contract, which is never made. The 'as if' label of that never made contract is often based on similar contracts in previous relations belonging to the 1st and the 2nd Circle.

'As if' contracts are sometimes very powerful because afterward-experiences related to a former event are often used to exert 'power' on another participant. They can lead to questions such as: 'who is controlling who'. Participants require a trained skill to detect and unravel 'as if' contracts (viz. James and Jongeward, 1971; Pont, 1991)

The parallel neuronal organization of representations of the four relational periods in the neuro-psychic domain 'enables' sometimes a predominantly represented relation in a specific Circle to confusingly affect some elements of 'best matching' relations belonging to the other Circles (VII: final overview).

In the 3rd Circle, goal-directed CONFIRMATION VALUES are experienced with a decreased amount of degrees of freedom and an increased amount

of responsibilities in an educational and/or professional world; the 'colour' of relations is partly dependent on contracts-in-advance and on 'as if'-contracts.

The neuro-psychic domain 'guides' its endo-system in experiencing events in the 1st, the 2nd and the 3rd Circle. This provides a condition by which children and adults can remember existence -confirming or -denying experiences in the 3rd Circle.

Despite the fact that in the 3rd Circle the professional attitude in bearing responsibility, together with a certain amount of degrees of unvoluntariness, often leads to respect, confirmation and increased self-esteem, people don't depend existentially on non-intimate and non-directly confirming experiences in the 3rd Circle. Self-esteem and stability are based on a certain level of confirmation values in all 4 Circles. The contribution to this level by 1st and 2nd Circle-experiences is relatively high.

It is obvious that the human endo-system can only develop its full potential in the interactive world of the 3rd Circle when the 1st and 2nd Circle have unfolded themselves without hampering or blocking the child's interactive and communicative expectations and realities (see VII.: final overview).

V.b.4. THE 4th CIRCLE: the media-perceiving sub-domain is ruled by one-way contracts.

Already in the second year of life, the child is confronted with 4th Circle qualities. It then starts to relate to the pre-structured products of humans, such as play-toys, radio's, CD's, television, daily papers and

magazines, movies and videos. These products have a special value, because the humans who made them are not actually and physically present. 4th Circle relations present children and adults a world of events which are amazing and fascinating, which stimulate phantasy and which enable the growing child to organize and symbolize its own endo-exo reality. The often voluntary chosen 4th Circle-world of movie and video unfolds itself in an uni-directional way. Short-looped experiences and emotions are sometimes evoked by 4th Circle presenta-tions.

The formation of media-directed contracts in the 4th Circle is unilateral. This

formation leads to one-way contracts. They are realized by the participating child or adult that consumes the media-information. The presenter who offers information does not take part in this contract. Within 4th Circle relations, commitment and involvement are established on an exclusive voluntary non-obligating basis.

In the 4th Circle, CONFIRMATION VALUES are freely experienced.

Because of its pre-structured and uni-diretional character 4th Circle relations have often an intimacy avoiding and creativity suppressing vector. Within a context of the abundant intake of media-information, consumptive behaviour will often lead to emotional isolation and to a lack of criticism.

VI. INTEGRATION OF TWO CONCEPTS

VI.a. the integration and the endo-exo dichotomy

The integration of the Neuro-motor concept and the Four Circle concept is an inter-disiplinary endeavour which has led us to bring together relational issues, such as:

- the endo/exo separation and connection dichotomy (I.b.);
- SH.I.C.-processes (III.b.-d.) and
- four types of relational periods (V.).

SHaping)-I(nterfacing)-C(ounter-shaping) processes - SH.I.C.-processes - enable a human endo-system to selectively relate pre-selected 'best fitting' exo-values to 'best matching' endo-values (III.a.). These endo-values are derived from endo-standards (I.a.). The developing endo-system will increasingly recognize its interactive identity in relation to its recurrent autonomy realized by life-confirming and value-bearing SH.I.C.-processes (III.b.).

Value-exchanging SH.I.C.-processes manifest themselves in self-organized short-looping and long-looping behaviour. When the child in early life starts to develop four relational periods, the way these periods grow in early life appear to have their impact in adult life.

In the neuro-psychic domain representations of the short-looping participating sub-self and of the long-looping observing sub-self are continuously realized in an almost

oscillating sense in during experiences in one of the four relations. Both sub-selves are subject to the over-viewing and controlling sub-self or pilot (Pesso, 1991; IV.b.; Pesso, 1995, this volume).

VII. FINAL OVERVIEW

VII.a. a human endo-system

When the balance between short-looping genotype-induced behaviour related to the participating sub-self and long-looping phenotype-induced behaviour related to the observing sub-self (III.d.; IV.b.) is constituted, interactions with the meaning-bearing exo-world are realized.

As autonomy is the re-looping SH.I.C.-capacity to choose for the testing of life-confirming connections and to avoid or cancel life-denying ones (II.a.), the growing child will increasingly experience its developing autonomy in choosing 'interdependent' routes, 'coloured' by life-confirming long-looping processes and life-denying ones. The confirming processes present the child with tolerances to proceed with identity development in a specific 'direction', whilst the denying processes let the child risk its identity. This process of experience and choice is often the struggle, which will finally lead to re-current autonomy in adulthood.

VII.b. guidance and treatment

We will now focus on the life-confirming/life-denying balance of a persons' professional 3rd Circle relations. His/her expectations about a relation often contain besides expectations of professional confirmation and fulfilment, (sub-) consciously experienced fears or hesitations related to 'not-knowing', to 'becoming confused', to 'being disqualified' etc. Much of this is due to non-satisfying experiences during development in 1st and 2nd Circle relations. An incomplete background of interactive reality-touching and life-confirming experiences in early childhood, does not only affect the growing child, but also the 'professional' adult.

Then the latter might experience a relation as if other participants in the relation do not look at him/her, or do not listen at him/her, or do not appreciate his/her presence or expressions etc.

The continuous experience of not being confirmed in actual life is often related to

early non-tested long-looping behaviour during relational periods in childhood. Then, daily life, the capacity of being able to maintain existence-confirmation in connections with the outside world is often experienced as frightening and difficult to express. Then the development of many, if not all, relations is severely impaired. In conclusion: dysfunctional relational qualities in the 1st and 2nd Circle can badly affect 3rd Circle relations. When relations with the outside world are not 'flowing' but 'blurred' through fear-generating memories about previous life-denying interface representations stemming from the 1st and 2nd Circle, therapeutic or communicative guidance is needed.

That guidance will provide a more life-confirming environment to our person. Such an environment will enable him/her to find new life-confirming experiences to be processed and worked through. When the route of communication in bi-lateral intimacy and the aspect of independent time can become explored and clarified, the increase of new capabilities learned in therapy, coincide with new life-confirming interactive interfaces both at the level of actuality and at the level of life-confirming expectations.

During therapy and communicative guidance more fully experienced 1st and 2nd Circle-values can lead to the application of newly learned insights in real life related to all four Circles, including professional life in the 3rd Circle.

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