

Affect Logic: an Integrative Model of the Psyche and its Relations to Schizophrenia

LUC CIOMPI

The integrative concept of 'affect logic' is based on a hypothesis concerning the laws of interaction between emotion and cognition. 'Affects' are defined as global psychophysiological states which determine the prevailing functional 'logic', i.e. the specific ways in which cognitive elements are selected and linked together. This leads to an integrative psychosocio-biological evolutionary model of schizophrenia, in which a specific affective-cognitive vulnerability is built up in a first phase, through escalating interactions between unfavourable genetic-biological and psychosocial influences. In a second phase, the mental system is decompensated by psychosocial or biological stressors which induce psychosis. The great variability in long-term course (third phase) is conditioned by the complex interplay of many biological and psychosocial variables. The organising functions of affects are evident in schizophrenic core phenomena such as ambivalence, incoherence, and emotional flattening. This proposed model has numerous practical and theoretical implications.

Both our theoretical understanding of schizophrenia and the available practical-therapeutic approaches to it are still unsatisfactory in many ways. Particularly lacking are sufficiently differentiated integrative concepts which would explain how psychological, social, and biological factors are related and continually interacting. As a result, one-sided reductionistic tendencies, which neglect one or another of these three essential phenomenological aspects, are still dominant in everyday practice.

A new integrative psycho-socio-biological model called 'affect logic' was first proposed in 1982, in a German book which was eventually translated into English, and the model has since been further developed (Ciompi, 1982, 1986, 1988, 1991). The term 'affect logic' – an appropriated German neologism which is difficult to translate with exactly the same meaning – points to the main conceptual basis of the model. This is the well established, but widely neglected, fact that emotions and cognitions – or feeling and thinking, affectivity and logic – are always inseparably related. They interact in regular but so far not sufficiently well understood ways, both in normal and in pathological mental functioning. Psychotic disturbances are viewed as specific modifications of these interactions. The integrative power of the concept stems from the close relationships between psychological, social, and biological/somatic aspects in the comprehensive notions of 'affects' and 'logic', as they are defined below.

Basic concepts

'Affects' (such as joy, fear, sadness, rage) are understood as global qualitative states which 'affect' not only the mind, but also the brain and the whole body: they may bristle the hair, colour or whiten the skin, widen or narrow the pupils of the eye, tense or relax the muscles, accelerate or slow down the respiration, etc. This definition is therefore a truly psychosomatic one; it includes both mental and neurophysiological, subjective and objective, conscious and unconscious aspects.

'Logic', on the other hand, is defined as the way of linking and relating different cognitive elements (elements of perception) to each other. It therefore includes not only current concepts of cognitive functioning, information processing, or 'thinking', but also different definitions of formal logic.

In its cognitive aspects, the comprehensive concept of affect logic is based on Piaget's genetic epistemology, and especially on his constructivistic understanding of the development of cognitive concepts through action during childhood. The affective-emotional aspects, on the other hand, are conceptualised according to current psychological theories of emotions and also certain psychoanalytical notions. These especially concern the 'transference' phenomena and the genesis of consistent internal self- and object-representations, according to modern ego- and object-relation theory. Interpersonal-social phenomena are taken into consideration according to current notions of – mainly systemic – group

and family dynamics. Biological–neurophysiological aspects are also included, on the basis of current research concerning the role of the limbic system in the regulation of emotions and its connections with the frontal cortex, hormonal apparatus, and different neurotransmitter systems. The notion of neuronal ‘memorisation’ of relevant experiences through the phenomena of neural plasticity and state-dependent learning also plays a key role.

The main focus of ‘affect logic’ is on the laws of interaction and the formal relations between feeling and thinking. On the basis of the concepts mentioned above, it is proposed that during childhood development (and also later), functionally relevant specific emotions are continually and systematically linked to relevant cognitions. They thus generate an ever more differentiated hierarchical network of functionally integrated affective–cognitive systems of reference, or context-related ‘programmes’ for feeling, thinking, and behaviour through repetitive actions, and especially through interpersonal interactions. By neural plasticity, these ‘programmes’ are encoded in specific neuronal pathways, which eventually provide the functional matrix for all further cognition and communication. They also represent the neurophysiological basis of a wide range of repetitive phenomena, from the simplest conditioned reflexes up to the most complex ‘transference’ reactions (in the psychoanalytical sense).

Moreover, context-specific affects in the sense defined above are understood as major organising forces which integrate cognitions. They appear as responsible for the specific ways in which relevant cognitive elements are acknowledged, selected, and linked together in concrete actions and interactions, thus forming a context-specific functional logic (in the same sense). As we are always in a psycho-affective and neurophysiological state that is determined overall, even the logic of science and the formal logic of philosophy are assumed to be largely conditioned by underlying specific affects. For instance, this may be by a relaxed and pleasant mood (logical solutions, discoveries, etc. being related to pleasant feelings) which we call ‘neutral’ only because its specific emotional connotations usually remain unconscious. Different types of logic are in operation in different emotional states: ‘fear-logic’, ‘anxiety-logic’, ‘anger-logic’, ‘aggressivity-logic’, ‘pleasure-logic’, ‘love-logic’, ‘mourning-logic’, etc. all exist. They correspond to different states of consciousness in a wide sense, characterised by different types of cognitive functioning and information-processing which are not compatible with each other, as showed by current research on state-dependent learning and memory

(Koukkou, 1980; Machleidt *et al*, 1989; Ciompi, 1991). Quite similar mechanisms are observable also on the collective level (e.g. in couples, families, groups, and even whole nations, as demonstrated by the prevailing aggressive ‘logic of war’ in ex-Yugoslavia and elsewhere).

Thus, the whole psyche is understood as a complex hierarchical network of affect-specific and context-related functional affective–cognitive systems of reference. These are generated through action, and in particular through interpersonal–familiar transactions, which are stored and memorised on the neuronal level and in specific neurophysiological pathways, and re-mobilised by specific cognitive or emotional triggers. This conceptualisation thus establishes an organic link between intrapsychic–psychological, interpersonal–familial, and biological phenomena, as well as between affective and cognitive functions and the whole ‘peripheral’ body. It therefore seems capable of integrating current knowledge from different relevant fields of science into a comprehensive psycho-socio-biological model with a wide range of potential practical applications.

Affect-logic and schizophrenia

On the basis of this model, the literature, and current research on the long-term course and the evolutionary dynamics of schizophrenia (including our own),

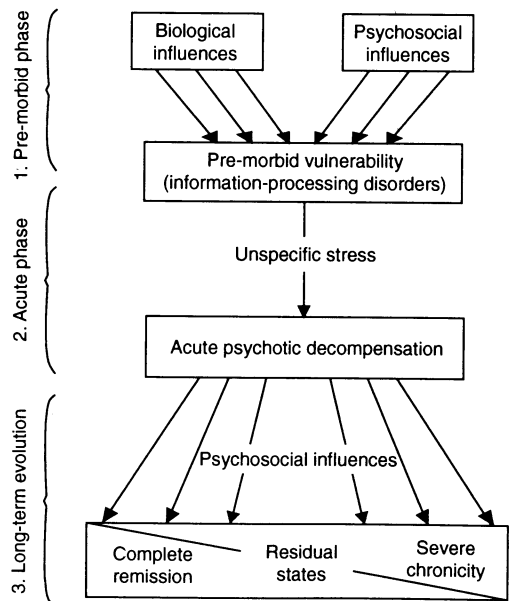


Fig. 1 Integrative psychosocial–biological evolutionary model of schizophrenia in three phases (Ciompi, 1982).

the following integrative psychosocial–biological evolutionary model of schizophrenia in three phases is proposed (Fig. 1) (Ciompi, 1982, 1983, 1986, 1988). The first phase is the pre-morbid period which lasts from conception until the time just before the outbreak of the psychosis. During this time, the normal gradual building-up of an increasingly complex system of functional ‘programmes’ for feeling, thinking, and behaviour is disturbed by genetic deficiencies (e.g. an inborn emotional lability or overreactability) and/or by traumatic psychosocial experiences (e.g. early separation or other discontinuities impeding the formation of sufficiently consistent cognitive–emotional systems of reference). Thus, a specific psycho-socio-biological vulnerability is created which reduces the capacity for coping, especially with highly emotional or contradictory stimuli. It also destabilises, particularly affecting the self- and object-representations mentioned above, which correspond to higher order programmes for regulating the sense of identity and the distinction between internal and external reality.

In a second phase, this vulnerable ‘terrain’ is gradually overtaxed and destabilised by escalating interactions between reduced coping capacities and additional psychosocial and/or biological emotional–cognitive stressors. These may partly correspond to normal developmental tasks (e.g. leaving home, finding a sexual and professional identity, mating, pregnancy, childbirth), to related hormonal changes, or to the use of drugs. At a critical ‘point of no return’ (Bleuler, 1984), the whole psycho-socio-biological coping system is finally decompensated and forced into a new overall pattern of functioning which corresponds to psychosis, and represents, in chaos-theory terms, a new ‘dissipative structure’.

During the third phase (i.e. long-term evolution), a great (and in the individual case, unpredictable) variety of possible courses can occur, ranging from complete and stable remission, through recurring acute exacerbations and different types and degrees of residual state, to severe chronicity. In the perspective of affect logic, all these variations must be understood as different dynamic forms of self-organisation of a complex psycho-socio-biological system. This is under the influence of many intervening variables, including the type and degree of pre-morbid vulnerability, the form, history, and duration of the psychosis itself, and many additional biological, psychosocial–environmental, and therapeutic influences – favourable or unfavourable. Negative symptoms, which usually prevail during the third phase, are also viewed as the complex result of interactions between primary disturbances (the ‘basic

symptoms’ described by Süllwold (1977) and Huber *et al* (1979)) and secondary defence mechanisms, coping strategies, and self-healing mechanisms (cf. Böker *et al*, 1984; Strauss *et al*, 1985).

During all three phases, the organising and integrative functions of affects are assumed to play a key role for the overall organisation of both pre-psychotic and psychotic thinking, feeling, and behaving. This can be illustrated by the three psychotic core phenomena of ambivalence, incoherence, and affective flattening. In each of them there is a striking parallel between the type of emotional dysfunction and the specific form and content of thought and behaviour disorders. In ambivalence, not only affects but also thoughts and behaviour become highly unstable; they are continually and simultaneously fluctuating from one extreme to the other. Similarly, in psychotic incoherence, abrupt blocking or instability of feelings goes along with similarly blocked or incoherent thoughts and behaviour. In affective flattening, there is again a close parallel between flattened feelings and impoverished thoughts and behaviour. Dynamically speaking, chronic emotional flattening may be partly understood as an affective counter-regulation, on a psychological and social as well as on a biological level, against the stressful and frightening experience of acute psychosis. Particularly rigid affective–cognitive defence mechanisms seem also to be at work in paranoid schizophrenia, continually conditioning not only the focus of attention and the selection of cognitive stimuli, but also the way in which they are linked together and interpreted (i.e. the ‘logic’ in the defined sense). Eugen Bleuler (1926) spoke of the “switching power of affects” in the same context.

In the other two classical psychoses – mania and melancholia – where all cognitive functions are continually and almost completely distorted in a euphoric or depressed way, the fundamental organising and integrating functions of affects on thought and behaviour seem even more obvious than in schizophrenia. According to the hypothesis of affect logic, schizophrenia, like mania and melancholia, could – and perhaps should – be understood as a typically affective psychosis – though one of a particular type. Whereas in mania and melancholia the link between emotion, cognition, and behaviour seems much too rigid and unilateral, in schizophrenia – at least in its initial acute phases – this link appears to be too unstable and inconsistent. The hypothesis of a schizophrenic (and perhaps also manic and melancholic) ‘limbo-pathy’, with specific disturbances in the neurotransmitter interactions between limbic system and frontal cortex (for which some evidence can be found in the current literature),

would therefore be very attractive from the point of view of affect logic.

Practical and theoretical implications

On the practical–therapeutic as well as on the theoretical level, the concept of affect logic has a number of interesting implications. If the basic emotional state has indeed such an important organising influence on cognitive functioning and behaviour as is postulated, then – especially in acute schizophrenia, but also in other conditions – a new emphasis should be put on the affective side of all therapeutic approaches and measures, including communications and environments. Concerning the latter, in contrast to the usually tense and bewildering admission wards, a therapeutic setting as relaxing, secure, and supportive as possible would be indicated, especially for highly agitated and frightened psychotic patients. This seems to be confirmed by current Scandinavian research on therapeutic environments (Friis *et al.*, 1982; Friis, 1986; Werbart, 1992) as well as by our own experiences with the pilot project Soteria Berne for acute schizophrenics, on which detailed information has been given elsewhere (Ciompi *et al.*, 1991, 1992, 1993). In the warm, open, supportive and relaxing emotional atmosphere of a small and stimulus-protected open house, specially designed according to the concepts of affect logic, highly psychotic patients quite often improve or even recover within days or weeks, with no or only minimal neuroleptic medication. Similar observations were reported by Mosher & Menn (1975, 1978) from a Soteria House in California.

In relation to the concept of affect logic and the speculations on schizophrenia as an ‘affective psychosis’, these observations lead to the question of whether neuroleptics also, and not only the classical antidepressants, may have their primary impact on the emotional level (e.g. by a dampening action on certain parts of the limbic system), and only a secondary impact on cognition and behaviour. Furthermore, they speak for much closer interactions between the psychosocial and the biological domain than is generally admitted. It has been postulated by Gabbard (1992), in agreement with our own psychosocio-biological model, that under certain conditions, psychosocial and environmental stimuli may have the same impact on brain physiology as psychotropic drugs.

Moreover, the concept of the psyche as a complex network of dynamically equilibrated affective–cognitive systems of reference, or ‘programmes’ opens up the possibility of considering mental functioning in terms of modern theories of non-linear

dynamics of complex systems (chaos theory). From this viewpoint, both normal and pathological modes of functioning appear as typical ‘attractors’ of fractal structure. Similarly, psychotic (or other) modifications of the overall pattern of information processing may correspond to new dissipative structures, appearing after ‘fluctuations’ and ‘bifurcations’ as a consequence of an emotional overload, in analogy to the consequences of an energy overload in many other systems. On the purely cognitive level, quite similar mechanisms are already implicit in Piaget’s concepts of the evolution of mental structures. Early systematic investigations along these lines in the field of schizophrenia have already brought some encouraging results (Schiepek *et al.*, 1992; Ciompi *et al.*, 1992; Ambühl *et al.*, 1992). Here, as well as in the other areas mentioned, the integrative concept of affect logic seems capable of providing a useful theoretical framework for future research and practice.

It is evident that the postulate of different kinds of logic also has far-reaching epistemological and philosophical implications, though these cannot be discussed here. They agree well with currently prevailing ideas in the philosophy of science (especially those with a constructivist orientation), and also with the fact that different kinds of ‘logic’ have long coexisted in science, such as in the form of relativistic and non-relativistic physics, or of Euclidean and non-Euclidean geometry.

References

- AMBÜL, B., DÜNKI, R. M. & CIOMPI, L. (1992) Dynamic systems and the development of schizophrenic symptoms – an approach to formalization. In *Self-Organization and Clinical Psychology* (eds W. Tschacher, G. Schiepek & E. I. Brunner), pp. 195–203. Berlin: Springer.
- BLEULER, E. (1926) *Affektivität, Suggestibilität, Paranoia*. Halle: Marhold.
- BLEULER, M. (1984) Das alte und das neue Bild des Schizophrenen. *Schweizer Archiv für Neurologie, Neurochirurgie & Psychiatrie*, **135**, 143–149.
- BÖKER, W., BRENNER, H. D., GERSTNER, G., *et al.* (1984) Self-healing strategies among schizophrenics: attempts at compensation for basic disorders. *Acta Psychiatrica Scandinavica*, **69**, 373–378.
- CIOMPI, L. (1982) *Affektlogik: ueber die Struktur der Psyche und ihre Entwicklung – ein Beitrag zur Schizophrenieforschung*. Stuttgart: Klett–Cotta.
- (1983) How to improve the treatment of schizophrenics: a multicausal illness concept and its therapeutic consequences. In *Psychosocial Intervention in Schizophrenia: an International View* (eds H. Stierlin, L. C. Wynne & M. Wirsching), pp. 53–66. Berlin: Springer.
- (1986) Zur Integration von Fühlen und Denken im Licht der ‘Affektlogik’: die Psyche als Teil eines autopoietischen Systems. In *Psychiatrie der Gegenwart* (eds K. P. Kisker, H. Lauter, J.-E. Meyer, *et al.*), Vol. 1 (3rd edn), pp. 373–410. Berlin: Springer.
- (1988) *The Psyche and Schizophrenia: the Bond Between Affect and Logic*. Cambridge, Mass.: Harvard University Press.

- (1991) Affects as central organizing and integrating factors: a new psychosocial/biological model of the psyche. *British Journal of Psychiatry*, **159**, 97–105.
- , DAUWALDER, H. P., MAIER, Ch., *et al* (1991) Das Pilot-Projekt 'Soteria Bern' zur Behandlung akut Schizophrener. I. Konzeptuelle Grundlagen, praktische Realisierung, klinische Erfahrungen. *Nervenarzt*, **62**, 428–435.
- , AMBÜHL, B., & DÜNKI, R. (1992) Schizophrenie und Chaostheorie: Methoden zur Untersuchung der nicht-linearen Dynamik komplexer psycho-sozio-biologischer Systeme. *System Familie*, **5**, 133–147.
- , KUPPER, Z., AEBI, E., *et al* (1993) Das Pilot-Projekt 'Soteria Bern' zur Behandlung akut Schizophrener. II. Ergebnisse der vergleichenden Verlaufsstudie über zwei Jahre. *Nervenarzt*, **64**, 440–450.
- FRIIS, S. (1986) Measurements of the perceived ward milieu: a reevaluation of the Ward Atmosphere Scale. *Acta Psychiatrica Scandinavica*, **73**, 589–599.
- , KARTERND, H., KLEPPE, S., *et al* (1982) Reconsidering some limiting factors of therapeutic communities: a summary of six Norwegian studies. In *The Individual and the Group* (eds M. Pines & L. Rafaelsen), pp. 573–581. New York: Plenum.
- GABBARD, G. O. (1992) Psychodynamic psychiatry in the 'Decade of the Brain'. *American Journal of Psychiatry*, **149**, 991–998.
- HUBER, G., GROSS, G., & SCHÜTTLER, R. (1979) *Schizophrenie: eine verlaufs- und sozialpsychiatrische Studie*. Berlin: Springer.
- KOUKKOU, M. (1980) EEG reactivity in acute schizophrenics reflects deviant (ectropic) state changes during information processing. In *Functional States of the Brain: their Determinants* (eds M. Koukkou, D. Lehmann & J. Angst), pp. 265–289. Amsterdam: Elsevier/North-Holland.
- MACHLEIDT, W., GUTJAHN, L., & MÜGGE, A. (1989) *Grundgefühle, Phänomenologie, Psychodynamik, EEG-Spektralanalytik*. Berlin: Springer.
- MOSHER, L. R. & MENN, A. Z. (1975) Evaluation of a homebased treatment for schizophrenics. *American Journal of Orthopsychiatry*, **45**, 455–467.
- & — (1978) Community residential treatment for schizophrenia: two-year follow-up data. *Hospital and Community Psychiatry*, **29**, 715–723.
- SCHIEPEK, G., SCHOPPEK, W., & TRETTER, F. (1992) Synergetics in psychiatry – simulation of evolutionary patterns of schizophrenia on the basis of nonlinear difference equations. In *Self Organization and Clinical Psychology* (eds W. Tschacher, G. Schiepek & E. J. Brunner), pp. 163–194. Berlin: Springer.
- STRAUSS, J. S., HAFEZ, H., LIEBERMANN, P. B., *et al* (1985) The course of psychiatric disorder: III. Longitudinal principles. *American Journal of Psychiatry*, **142**, 289–296.
- SÜLLWOLD, L. (1977) *Symptome schizophrener Erkrankungen: uncharakteristische Basisstörungen*. Berlin: Springer.
- WERBART, A. (1992) How to use therapeutic environments in the treatment of schizophrenia? Common ground and areas of disagreement. *Norwegian Journal of Psychiatry*, **46**, 19–25.

Luc Ciompi, MD, *Professor of Psychiatry, Medical Director, Sociopsychiatric University Clinic, Murtenstrasse 21, CH-3010 Berne, Switzerland*