

The Bio-semiotic Roots of Metapsychology

Anna Aragno PhD

“We must call on the Witch to our help after all!”

Goethe, *Faust*, part 1, Scene 6.

(in Freud, 1937, p.225)

Midway along the journey of my life, through unforeseeable circumstance, I found myself at a dark crossroad, obliged to renounce my chosen path and embark on a new one. So it was that I returned to university studies in psychology to obtain degrees required for specialized training in Psychoanalysis. With a strong background in the arts, humanities, and languages, and an invincible determination to follow Freud’s recommended course of study for analysts, I ignored the demoralizing ‘counselors’ (“you want to be an *analyst*? Do you know *how many years* it will take? etc.) and went on undaunted, selecting courses from different university departments, creating my own vigorously multidisciplinary program of study. My goal was to acquire the breadth of knowledge recommended by Freud for future analysts. The range of courses I took – from infant/child and life-development studies, memory, language acquisition, mad literature and art, systems theory, the philosophy of science, physiology, neuroanatomy, and a two year research lab observing indices of the separation-individuation process in 18 month olds – (to name just a few) gave me the broad interdisciplinary foundations that, combined with a humanities background, would serve me well in psychoanalysis.

Starting late meant I had a lot of catching up to do, reading our voluminous literature, attending many lectures and eventually completing a Masters and PhD programme concomitant with the five year specialized training in psychoanalysis. Thus it was, spending many a late evening in the library, along the murky corridors of academia, peering into row upon and row of dusty old volume, that I encountered ‘metapsychology,’ the “Witch,” invoked by Freud to describe the summative psychobiological theoretical underpinnings of his psychoanalytic findings. And while my primary interest in psychoanalysis had never been clinical, as I became more familiar with the nature of the metatheoretical problems, and the urgent need for their rethinking and updating, my focus on this challenge was secured. Fortunately, a few excellent professors introduced us to the latest analytic quarrels which, as we shall see, centered furiously around the validity, usefulness, or even need, for so problematic a Metapsychology. I was entering the field at a time of intense ferment and fragmentation, in fact, at the demise of this great controversy. Psychoanalysis was continuing to splinter into many clinical camps, with no viable, modern, central model of mind as anchorage and endless calls for radical revision but few ever actually proposed.

Thrilled as I was to be immersed in psychoanalytic studies the course that galvanized my interests most and was to impact - like a shock wave - on my thinking forever, was not

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psychoanalytic at all. It was a six-week crash summer tour de force on “Human Behavioral Biology” given by a young ‘genius’ professor fresh out of Harvard, Robert Sapolsky, who spent his summers studying baboons in Africa. This brilliant, buoyant, research biologist, who has since remained an invaluable mentor, started out with a diagram on the board depicting intersystemic causality, the complex convergence of multiple strands and systems of functioning that enter into any organismic behavior. He then handed out the syllabus and we embarked on a roller coaster ride, in a sweltering New York July, during which we raced through six peripatetic weeks; one for Sociobiology; one for Ethology; another with Mendel and molecular and behavioral genetics; the next on neurophysiology and neurochemistry; another on the autonomic nervous system, pituitary and endocrine secretions; then endocrinology and the biochemistry of certain disorders, and so on, each and every week...with an exam and a paper due at the end! Aside from raising the bar on speed reading and assimilation, this particular approach left a lasting impression on me, such that it permanently grounded me in its multiperspectival investigative stance. Later on I was led to the works of Cassirer and S. Langer, the latter’s revolutionary “Philosophy in a New Key” (1942) and massive three volume opus “Mind: An Essay on Human Feeling” (1967, 1972, 1982) providing precisely the conceptual turn through which I would formulate the revision that was gestating in my mind.

To these key readings were gradually added the great works of psychologists Piaget (1923,1962, 1969,1970) Werner and Kaplan(19630, J.Bruner (1969), Vygotsky (1960,1978,1981): the founder of Sociobiology, E.O Wilson(1975,1978,1998); philosophers of language Cassirer(1945), Wittgenstein(1922), Whitehaed (1927), N. Goodman(1984),M.Bakhtin (1981, 1986), and of science Kuhn(1962), Polanyi(1964): anthropologists Levy-Strauss(1964), A. Marshack,(1972) V. Turner (1974,1980,1982); early neurologists Lashley, Pribram, Penfield, and later ones, Maclean (1973), Luria(1966a,1966b), Damasio (1994, 2001); the ideas of von Bertalanfy(1968), epistemologists McCullogh,(1965), G. Bateson(1972,1979), Maturana and Varela(1980), and mathematician N. Wiener, sociologist P. Rieff (to name just the most influential); and contemporary literature on cybernetics, information theory, the neurosciences, cognition, semiotics, literary and narrative theory, along with our own psychoanalytic literature, mirroring the dominant theoretical interests and conceptual shifts of the times. This broad multidisciplinary base of knowledge formed the foundations of my intellectual development, much as Freud had recommended. At this juncture, in order to make comprehensible where I was heading, and why, we will take a brief tour of the history and development of psychoanalytic ideas.

Prelude: 1880-1895

Freud was a research biologist prior to entering medicine to become a neurologist. His scientific lineage descending from Leibnitz, through Brücke, Helmotz and his teacher Meynert, was in the strictly deterministic, mechanistic/physicalist tradition, requiring that all explanations be couched in known physio-chemical forces, purged of any teleological or vitalistic connotations. However, as a man of his times, Freud was also receptive to the formidable impact of Darwin’s evolutionary biology; Hughlings-Jacksons’ epigenetic neurology - stage-specific stratifications

prone to regressive dissolution; Haeckel's 'biogenetic law'- ontogeny recapitulates phylogeny; the flurry of studies on childhood sexuality by von Kraft-Ebing, Havelock Ellis, and particularly his close friend W.Fliess. Freud had observed Charcot's hypnotic treatments at the Salpêtrière in Paris, was familiar with Bernheim and Janet's works and, closer to home, with the psychology of Benedick, Herbart and especially Fechner, all intimating theories proposing a dynamic splitting of consciousness by repression. Immersed in these current trends, against the constant backdrop of Lamarckian scaffolding, Freud gradually gathered up these many strands of knowledge and, through continuous observation and synthetic efforts, propelled them forward in the elegant formulations, speculative though they may have been, that effectively accounted for an array of psychobiological phenomena.

The fifteen year period between 1880-1895 yielded an eclectic array of scientific accomplishments as the young, talented, Freud explored a variety of subjects from brain anatomy to cocaine, aphasia to hypnosis, the central nervous system to childhood brain paralysis, finally specializing in the neuroses and hysteria. This last interest culminated in "Studies in Hysteria" (1895) written in collaboration with J.Breuer, in which many core elements and precursors of psychoanalysis are adumbrated. Already in place are the theory of defensive (pathogenic) repression; quotients of strangulated affect requiring 'abreaction'; disconnected states of consciousness; the benefits of "talking and recollecting;" and 'psychogenesis', the idea that 'hysterics suffer mainly from reminiscences:' the mind may conjure physiological symptoms.

Birth of Psychoanalysis: 1893-1900

During his neuro-anatomical, phase Freud had attempted in his unpublished "Project" (1893) to compose a mathematico-neurological model of mind that would correlate with his psychological observations. But abandoning this unsuccessful plan Freud turned definitively toward a psychological approach to the study of mental phenomena. This notwithstanding, although the form of the 'Project' was discarded, many of its key concepts—the constancy principle, shifting quantities and forms of energy, disconnected systems of consciousness, etc — found their way first into the Breuer/Freud(1895) etiological theory of hysteria, and then more comprehensively in the famous chapter VII of the dream book (1900). Already foreshadowed in both are also Freud's three fundamental metapsychological points of view; a *dynamic* psyche, the *economics* of quotients of energy, and the *topography* of different mental systems.

"The Interpretation of Dreams" (1900) emerged as the culmination of Freud's early clinical observations and theoretical integration. Remarkable for its exhaustive coverage of extant ideas on dreams, this work is considered the first, landmark psychoanalytic text due to the content of chapters six and, primarily, seven. Here, undergirded by many key neuro-physio-chemical concepts directly transposed from the abandoned 'Project,' Freud lays out the overall purpose of dreaming; its igniting 'day residue' spark reattaching to a childhood memory; its motive force the "wish;" its two-tier manifest/latent structure; the different mechanisms of the 'primary-process,' an Ucs, pictorial language translated via 'secondary-process' linguistic interpretation; and the free associative method applied to dream-elements leading to the dream's underlying 'ideas' and overall meaning. More remarkable even than these observations is the

cohesive theoretical framework Freud is able to achieve adapting and redressing in psychological terms the pleasure/pain and constancy principles; regression to earlier modes of functional organization; quantities of 'instinctual energy' expenditure; and different forms taken by a fluid 'energy;' free in the Ucs primary-process, bound in the Cs. secondary-process. In place and grounded in a new psycho-energetic framework, are the Ucs, Pcs and Cs. mental systems of Freud's first *Topographical* model — a general model of mind for normality and pathology. Both the etiology of hysterical symptoms and the nocturnal dream (a universal phenomenon of mental activity) are now understood as having decipherable, interpretable 'meanings' expressing a "psychic reality" more powerful even than reality itself.

Rapidly following the *Psychopathology of Everyday life* and concomitant with the *Joke* book, works underscoring repression, Ucs derivatives, and psychic determinism, in 1905 there appears Freud's second major psychoanalytic contribution, "Three Essays on the Theory of Sexuality". Here Freud begins to consolidate an organic bio-genetic program with universal historical-phylogenetic origins finding in the 'indispensable premise of infantile sexuality' the biological roots of psychological maturation. At the heart of the fixed psychosexual developmental formula are universal bisexual tendencies, the Oedipus complex, and 'Libido,' the fluid 'instinctual energy' that weaves through Freud's entire theoretical opus accounting for a variety of transformational processes.

Growth of a Methodology: 1900-1915

Throughout this early phase of theory construction Freud was undergoing a dramatic conceptual shift from physio-neuro-anatomical mechanisms to a psychology of the nervous system anchored in 'instinctual drives' that are progressively tamed, 'civilized,' and redirected in their aims. As a physician his interest was in *etiology*; as a psychobiological scientist his interest was in understanding the sources of impetus and workings of a 'mental apparatus'. From its very origins, then, Freud's psycho-analytic method, mirroring its founder's observational span, was three things in one: a research methodology; a therapeutic technique; and a general theory of mind. Two broad trends in the study of life sciences were also already in evidence; an ontogenetic physio-chemical approach; and a phylogenetic, historical-evolutionary approach, each complementing the other and accounting for what the other cannot (Sulloway, 1979). In "Three Essays" (1905) Freud brought them together in a universally applicable psychobiological-genetic framework definitively establishing the historical-developmental foundations of psychoanalysis. From this new vantage point Freud moves toward later works — *Totem and Taboo* (1913), *Civilization and its Discontents* (1930), the *Group* book (1921), *Moses and Monotheism* (1938) -- in which he ventures into phylogenetic reconstructions connecting imagined prehistoric events to their inherited psychic traces in ontogenetic recapitulation. Yet the underlying tension between a psychological theory of mind and a psychobiological theory of human nature would reverberate throughout his opus. Just as the line between normality and pathology was obfuscated by the uncovering of 'madness' in the normal unconscious (through dreams) so the distinction between what is biological in mind and what is mental in a psyche situated throughout the body, remained a quandary dissolved in the unifying fluid of a fictive

sexual energy, “libido,” varying in quantity and changing in form, running through the works. Similarly Freud’s tendency to generate polarized forces – the pleasure/reality principle; lower and higher primary and secondary thought processes; passive/active; the Ego and sexual instincts; organic vs. sublimated drives; a dark, cauldron of Id impulses vs. a pristine, rational, linguistic Ego; and ultimately the highly abstract Life and Death Instincts, create a system of dualities echoing Darwin’s ethos of the struggle in existence yet also illustrating how Descartes’s long shadow was still impacting on all theoretical conceptualizations..

In 1908 Freud produced his first ‘psychoanalysis’ of a literary work, followed later by other works on major artists and artworks initiating the popular trend of applied psychoanalysis. Not until 1915 does he attempt to bring this large corpus of acquired theoretical understanding of unconscious phenomena under the umbrella of one cohesive system of ideas.

Papers on Metapsychology: 1915

As early as 1898 Freud had coined a term paralleling ‘metaphysics’ for his psychology of the unconscious.* The psychobiological imperative now firmly anchored in a developmental schema of psychosexual stages, Freud turned to laying down the foundational elements of his general ‘Metapsychology.’ In fact, from 1915 on, his early theoretical grounding secured, Freud’s main interest and focus was on establishing a stable theoretical framework for his polyperspectival science, a system of ideas for which there was no precedent or, indeed, any viable existing paradigm. On several occasions Freud bitterly lamented the science of his day, a *Weltanschauung*, so he bemoaned, that had not provided him with the necessary concepts through which to move from descriptive metaphors to explanatory hypothesis.

‘Papers on Metapsychology’ (1915) were written in a six-month spurt of productivity as the outbreak of the First World War left Freud more time to write. Of the twelve, some highly speculative, only the first five, written between March 15th and May 4th (1914), were ever published. Here collected in an interconnected series is the summative exposition of Freud’s theory of ‘Trieb,’ innate instinctual drives; of primary and secondary repression, the cornerstone of psychoanalytic etiology: of both the descriptive and system unconscious, possibly a whole hierarchy of psychical states; of dreams: and of his groundbreaking mourning and melancholia, where a detailed account of intrapsychic differences between normal and pathological mourning highlights the object-relational’ basis of his formulations while pointing forward toward his future ‘Structural’(1923) model of mind. Here, for the first time Freud (1915) declares that his psycho-analytic science requires more than one explanatory ‘point of view’ and proposes thenceforth “..that when we have succeeded in describing a psychical process in its dynamic, topographical and economic aspects, we should speak of it as a *metapsychological* presentation.” (p.181) This is, in fact, a ‘polyperspectival’ science to which the next generation of theoreticians will add the ‘genetic’ and ‘adaptive’ points of view, making a total of five metapsychological dimensions. Interwoven in these papers, also, are sporadic sprees into phylogenetic fantasies - a

*“(Incidentally I am going to ask you seriously whether I should use the term “metapsychology” for my psychology which leads behind consciousness”). (*Origins*, p. 246 letter to Fliess of March 10th, 1989)

tendency Freud expands on in later works – regarding the drives, repression, the origins of the Psychosexual stages, and the mechanisms of primary-process modes of thought, all of which are used to telescope backward into speculative reconstructions of the mental evolution of the species. In this Lamarckian-biogenetic framework Freud sharpens his theories of primal-organic and dynamic repression (to “suppress the development of affect” 1915 p.178) tying these to an innate, biological predisposition toward topographical regression -- as in dreams -- and to regressive fixation points in the neuroses and psychoses.

These papers reveal how comprehensive and cohesive a psychobiological system of interconnecting processes and principles of mental functioning Freud had developed for normalcy and pathology and just how central to its functional integrity is the concept of instinctual energy, ‘quotients of energy expenditure.’ The idea of a ‘psychical energy’ that changes form; holds repressions down as well as moving ideation up through language to consciousness; and assists in ‘sublimating’ drives by changing their aim, provides the crucial currency through which the ‘economy’ of the whole system’s fusions and transmutations occur. It is, in fact, the indispensable metaphor for “trans-formations”. To grasp the way body and mind are woven together in Freud’s organismic framework it is important to understand the very particular meaning *Trieb* -- the constitutionally endowed libidinal and aggressive ‘drives’ -- has in his scheme. A ‘drive’ is defined as the psychical representation of an endosomatic, continuously pressing source of stimulation invested with a certain ‘quantity’ of energy. It is an impulsion to action originating in the body but represented in the mind by means of its aim and the object to which it has become attached, a concept “on the frontier between the mental and the physical” (Freud, 1905, 168). The bio-genetic substrate is also emphasized in the concept of ‘erogenous zones’ associated with ‘component instincts’ in the stages of psychosexual development; in the ‘inherited’ (hard-wired) mental formations of the nucleus of the Ucs, the Id; and in the sense given to a psychical ‘topography’ which “...has *for the present* nothing to do with anatomy: it has reference not to anatomical locations but to regions in the mental apparatus, wherever they may be”(Freud, 1915, 175). Body and mind are constantly impinging on, influencing, and transforming, a ‘psychical apparatus’ that includes body orifices, the nervous system, emotions, and cerebral mnemonic and semiotic processes, all in one. Freud even hypothesized some continuity with higher ‘animal’ psychology through the concept of an instinctual core Id, as prime psychic fuel, but made it plain that in humans instinctual drives can only be represented by an ‘idea.’ Thought, and its instrument ‘language,’ are therefore of central interest to him, although the semiotic means by which mind interweaves with body remained elusive.

Here, as elsewhere, mental processes are presumed to operate unconsciously, the translation from *Ucs* to *Pcs* – from primary to secondary process modes of thought— occurring when a ‘censor’ has been overcome, repression loosened, and ‘words’ attached themselves to the ‘thing’ presentations of the *Ucs*; hence “..the conscious presentation comprises the presentation of the thing plus the presentation of the word belonging to it, while the unconscious presentation

is the presentation of the thing alone.”(1915, p.201) It was apparent to Freud that language is the indispensable instrument for the transition from *Pcs* to *Cs* awareness. How this transition actually comes about was described in terms of ‘hypercathexes’ and shifts in forms of energy: expedient and free in the unconscious, increasingly bound and delayed in *Pcs* and *Cs*’ness. Yet even in a most reductionistic moment, when asking what the physiological correlate of a ‘simple’ presentation might be, he answers swiftly “Clearly nothing static, but something in the nature of a process” (1915, p.208). His observation of the restraining power of *Pcs* thought processes, an “...inhibition of the tendency of cathected ideas toward discharge” (1915, p 188) verifies time-tested clinical evidence that linguistic analysis and verbal expression -- by inducing *thought* -- counteract impulses toward repetition of internalized experiences. As early as the 1880’s and throughout his metapsychological papers, particularly in his account of the Unconscious (1915), Freud’s keen attempts to understand what we now know to be semiotic processes of linguistic symbolization were depicted through a 19th century physio-alchemical analogy of changing forms of energy, while emotions, like drives, were considered ‘discharge’ phenomena.

Had Freud written nothing more after 1915, his theoretical legacy would already have been in place. But he went on to make further important contributions and emendations: In 1920 he shifted his primal dual drives from libido *vs.* self-preservative instincts to the broader more encompassing Eros (life) and Death instincts in full acknowledgement of the destructive powers of aggression, regression, and repetition. And by recasting anxiety (1923) as an adaptive ‘signal’ of the ego, in an Id-Ego-Superego, *Structural* model of mind, he gave prominence to both the hereditary influence of the distant past (Id) and the internalization of early object relationships (superego), pointing toward the evolution of Ego Psychology. Following Freud’s death this movement advanced the study of the Ego’s development, defenses, and many executive functions, leading to increased clinical sophistication and an expansion of the parameters of analytic technique and accessibility. What emerged from the psycho-bio-genetic, evolutionary, roots of Freud’s great opus was a profoundly dynamic paradigm of mind, echoing a Darwinian ethos depicting the inevitability of conflictual struggle between opposing tendencies in existence. Though always unpopular, and poorly understood today, the overriding polarization of Eros *vs.* a Death instinct - going beyond the pursuit of pleasure – underlying all organic life, representing forces that strive to join things together in unities *vs.* those that split them apart destructively, appears as the culmination of Freud’s humanistic wisdom and grandeur of vision.

This notwithstanding, it is specifically the distinction between primary and secondary process modes of thought, and the *transition* between the two, articulated in energetic terms, that Freud considered to be his deepest insight, though still an enigma: “A metapsychological presentation would most urgently call for further discussion at this point though perhaps that would be too daring an undertaking as yet” (1915, p.188). He knew that what qualified psychoanalysis as a science “...is not the material which it handles but the technique with which it works” (Freud, 1917, p. 389) - its pan-applicability. Through dream-structure and interpretation, Freud had inadvertently uncovered the underlying processes of meaning-making-- or *signification*. Yet topography, structure, invested and expended ‘quantities’ of energy fuelling

forces and counter-forces, the animating analogies Freud plucked from a physicalist paradigm, were the only concepts available to him to articulate a theoretical vision ahead of its time. A persistent plea runs through his opus that he be justified in borrowing conceptual analogies to chart propositions for his uncharted discoveries since the unknown may only be described by something that is already known. His bitterness at the limitations of the *Weltanschauung* of his era was tempered by recommendations that those who followed should update his preliminary formulations as new knowledge became available.

With characteristic prescience Freud had foreseen that the popularity of psychoanalytic therapy might override its function as a research methodology eclipsing the challenge of sharpening its scientific foundations. Despite the forward thrust of Ego Psychology its gains primarily deepened clinical theory not metapsychology which, very soon, especially in America, became the target of an out and out assault. The discordant dynamics of the growth pains of this fledgling science, tendencies already evident from the beginning, produced dissension, division and dispersion, rather than cohesion and revision, creating major ideological rifts. These totally eliminated a methodological analysis (as advocated by Rapaport, 1944, p 166) that would have clarified which phenomena derived from this method of inquiry were truly *scientific* i.e., what *could* be systemized and what *could not*. Once more, we are led back to Freud's recourse, the "Witch!" and his conviction of the indispensability of 'metapsychological speculation', without which significant metatheoretical progress could not be made. As late as 1937, he reiterated what he considered to be the single most valuable clue – "namely, the antithesis between the primary and secondary processes;" (p.225) to which I will return.

The Revolt against Metapsychology: 1959-1989

Given the stated 'provisional' nature of Freud's theoretical constructs, it is all the more astonishing to note the vehemence with which those against metapsychology who began with legitimate criticism, became more antagonistic, but then grew irrationally parricidal in their need to trash the idea (thereby verifying one of Freud's most fanciful phylogenetic speculative forays!) Whereas early loyalists, represented by the Ego psychologists, advanced metatheory while adhering to the framework and requirements of the original mold, the British Object-Relationists and next generation American psychoanalysts included those ready to dismiss metapsychology altogether. While Sterba (1963) still extolled the indispensability of 'libido' for the integrity of theoretical cohesion, Holt (1962, 1967, 1985), the most strident of the dissenters, after charting its decline and fall, would soon declare metapsychology already dead and buried! Not all psychoanalytic thinkers, however, felt the same. In the ensuing battle there were extremists, moderates, and revisionists; theoreticians for remodeling, those for abolishing, and clinicians, who saw no need for a metatheory, settling into broad camps: the Hermeneuticists, the hardcore Empirists, and those content with clinical theory and nothing more. But the furor fractioned the whole, perhaps irreparably, scattering the field into disintegration and dispersion so that by the late 1980's, guns still smoking, there were no less than ten or more clinical "schools" and still multiplying. And despite calls for radical revisions, with some valiant up to date pointers appearing, few were encompassing enough or satisfied the preliminary requisite of

figuring out which of the phenomena uncovered by this methodology could or should be systemized scientifically.

Discredited from without, embattled from within, psychoanalysis was in a paradigm crisis. It was as though the field had swung so far into its self-absorbing cacophony of voices that it had stopped listening to Freud, or reading him thoroughly enough, carefully enough, to follow his own multiperspectival direction, or remember his liberal, revisionary example. Each camp closed in on itself making a mountain out of the mole hill of its singular, partial-clinical theory, while metapsychology slept under a mantle of overgrown verbiage, as the Witch's children had indeed swallowed her up!

My Contributions to the Field

It was at this point, in the mid-eighties, that this novice entered a discipline in disarray. The abandonment of metapsychology and current controversies had eclipsed the greater challenge of establishing a viable explanatory theory for how the method works, along with Freud's most cherished scientific aspirations. His worst premonitions had been realized. Moreover, while everyone labeled their linguistic method 'psycho-analysis' it was definitely no longer *Freud's* psycho-analysis. By focusing almost exclusively on clinical matters the field was sidestepping the whole thrust of the challenge Freud had opened: His efforts to create a somato-psychical framework, unifying body and mind, in which the 'Unconscious' (Id) was also the self/soul of a *body* governed by a physio-chemically sensitive nervous system programmed by evolution to tame, mold, and socialize, what is universally recognized as 'human nature'. The complexity of this inherent, and subsequently mediated, biological 'nature' is compounded by the unique functions of the human brain which quickly learns to modulate and mediate action, emotion, and thought, by using signs and then symbols, of various kinds, in adapting to the social milieu. A general model of human motivation and behavior had to incorporate both biological *and* psychological processes. Freud's primary investment in "the mighty and primordial melody of the instincts" (Freud, 1924, p.62) reflected a need to create a psycho-biological metatheory as universal as it could be.

Indeed for Freud the organic/somatic underlay *was* the true unconscious. The physiological substrate does not end once the psychical begins but rather creates a psycho-physical parallelism a "dependent concomitant" (1915, 207). Anchorage in the biological 'instincts' and childhood sexuality were *essential* at the time not only for his theory of primal repression and infantile amnesia but as a safeguard against the problem of 'occultism' to which a science of the ephemeral 'psyche' was unquestionably vulnerable. To that end Freud held fast to this bedrock "...for the psychical field, the biological field does play the part of the underlying bedrock" (1937, 252). The forces and energies fuelling Freud's 'psychical apparatus' expressed in his theory of the instincts; primary repression; childhood sexuality; early defenses; the *actual* neurosis; and the repetition compulsion, are all basically biological phenomena which are rapidly infiltrated by psychological elements. Nowhere is the continuity between the biological and psychical more clearly expressed than in conversion/psychosomatic symptoms; abreaction (accessing and working-through of repressed affects); the etiological distinction psychoanalysis

makes between the pre-oedipal, disorders of the self vs. oedipal, conflict-based, disorders and, of course, the dream. However, lacking the concept of semiotic overlay or mediation, the fundamental questions regarding the continuity between body and mind, or unconscious to conscious, were left unexplained. Clearly a bio-semiotic developmental continuum of symbolization depicting different modes of pre-semiotic experience and signified meanings would help clarify the differences as well as provide principles for what *kind* of ‘talking’ cures.

As I began absorbing the literature, past and present, specializing in human development, I found many important new concepts and research findings in my interdisciplinary readings. Piaget had arrived on Freud’s heels (essentially replacing ‘psycho-sexual’ stages with sensory-motor and cognitive development) and other disciplines relevant to psychoanalysis – developmental studies, cognition, semiotics, linguistics, the philosophy of language, the neurosciences etc -- not to mention System’s theory, Naturalistic research and Information paradigm, had all burgeoned after the middle of the past century. From within psychoanalysis there were also important new findings subsequent to the war years by way of infant attachment studies; papers on the dissolution and reconstitution of the symbolic function; and the compelling separation-individuation paradigm (Mahler *et al*,1975), encapsulating the extremely significant phasic-process of interpersonal/intrapsychic differentiation with its momentous, cognitive/dynamic sequelae.

Gradually I had acquired the foundations of knowledge leading to the conceptualization of a unified system of bio-semiotic ideas encompassing solutions to key questions interspersed throughout Freud’s opus, principally; how to understand the transition and translation from primary (unconscious) to secondary process (conscious) modes of thought. I had found my new passion in the quest to reclaim what everyone else had discarded; the challenge of revamping metapsychology so that its conceptual framework corresponded to the linguistic action of its method. The goal was to construct a developmental paradigm containing explanatory principles for ‘how the method works:’ for, how it works is also how the human mind works. By selecting, distilling, and weaving together into a synthesis of core new interdisciplinary data, in “Symbolization” (1997), I proposed a bio-semiotic, developmental paradigm in which transformations of mental organization are explained not by energetic shifts but by the mediating impact of semiotic functional-forms. The six-stage developmental continuum of symbolization and discourse reference, flanked by concomitant major conceptual revisions, was a recasting of Freud’s Topographical, or, *general* model of mind. This revisionary model proved generative enough to yield a line of observational research studying human conscious and unconscious communications which lead to a second book, “Forms of Knowledge” (2008) cast within the same bio-semiotic paradigm.

From the outset I knew that pathology, diagnostics, and clinical controversies were of little interest to me. What piqued my curiosity to the point of passion were phenomena exemplified by the ‘general’ theory of mind; jokes, slips of the tongue and pen, conversion symptoms, art, anthropology, and, most of all, the Shibboleth of psycho-analysis, the great MRI of the human psyche, the dream. For me, both in clinical practice and theoretical inquiry, the

formation and structure; the mechanisms of the dream-work; and the interpretive technique translating a pictorial narrative into linguistic understanding of Ucs latent thoughts, is still the 'royal road,' the greatest investigative instrument into the human psyche. It is in the formative impetus of the dream, a natural bio-psychical phenomenon straddling body and mind, and in the universal impulse to 'interpret' or understand its *meaning*, that, as Freud emphasized, lie the deepest insights into the nature and workings of the human mind. The full dimension of Freud's observational genius is grasped by those who understand the depth and detail of his analysis of the dream-impulse and construction; its processes and mechanisms of meaning-making; and its associative technique of linguistic interpretation. Why is the dream so central in psychoanalysis and important for understanding the human psyche? Because in its overall metaphorical structure; its impetus to 'represent' multidetermined, highly condensed, pictured meanings and relationship dynamics; its selection and amalgam of sensory-motor, perceptual and emotional memory; and its episodic, storied sequencing, the dream is a slice of emotive-sentience, an expressive product of a feeling/thinking brain. Without motion or sound, articulated in pictured processes that are precursors of linguistic tropes, the dream exhibits the dynamic/emotive roots of human meanings and how these are signified thematically in thoughts, fears, premonitions, worries and wishes.

Given the centrality of emotion in dream construction and of Freud's recognition of this as an unconscious 'mode of thought,' it is surprising that affects, other than anxiety, were not given more prominence in his subsequent theorizing. But viewing affects, like drives, as 'discharge' phenomena created a lacuna in psychoanalytic thinking that has only recently begun to be corrected. With ample corroboration from neuroscience it is now commonly accepted that emotion and reason, affect and cognition are intimately connected. As biological gateways to an organism's internal state and our primary mode of communicating taking the modulation and mediation of natural affect/motor expression by social signs as the central operative function in psychological development continues a significant paradigm shift begun in 'Symbolization' and then more fully developed in 'Forms of Knowledge'. Affects and not instincts are prime movers in humans, originators of impulse/defense and adaptive or maladaptive compromise, because in humans impulses are rapidly overlaid by internalizations and *meanings* – and both, but especially *meanings*, imply processes of *signification*. This fundamental premise -- the early interpolation of the 'sign' -- becomes the basis for an entirely different way of approaching and understanding the development, splitting, integrity and dissolution, of the human psyche. Furthermore, it encompasses in one system of ideas both principles of psychological development as well as how psychoanalytic discourse makes conscious the unconscious, thereby integrating the practice of the method with its metatheoretical base.

In 'Symbolization,' (Aragno, 1997) the concept of a layered or stratified psyche, as intimated by Freud, is expressed in an epigenetic, hierarchic model of semiotic development that moves from natural, biological signals through signs to symbols. The semiotic function is viewed as a human trait that enables us to make use of signs and symbols as designators and signifiers of 'things', to name, point out, refer to, represent, organize and categories, conceptualize and

communicate, *complex meanings*, as no other species can. I make a clear distinction between the given biological ‘signal,’ a natural mode of communication we share with higher primates and other species, and the discrete systems of signs and symbols which, due to our unique cerebral anatomy, provide semiotic means which come to color and dominate behavior and experience in many different aspects of life. The most important points regarding this model are that, i) the differential impact of each of these discrete semiotic forms results in dramatic shifts in subjective experience, motives and meaning-organization; ii) advances and consolidation in semiotic functioning are contingent on, as well generating, increased cognitive distinctions implying *adequate* intrapsychic separation and differentiation; iii) these semiotic forms continue to intermingle and mix in everyday thought, communication, and experience; and iv) differences in semiotic form have powerful bi-directional impact in human interactions. The biological signal has no referent; there is no distance between its form and what it means, its impact is global, instantaneous, inciting action and *reaction*. The sign, on the other hand, is already more distinct, it is separate from what it indicates or denotes and is therefore expedient in drawing perceptual attention to, designating, pointing to, identifying, denoting, and naming ‘things.’ Only the symbol proper, however, is fully differentiated from what it represents; a symbol stands for something other than itself, is often layered and may be highly condensed in its more elaborate, abstract forms. The symbol is made, not found; it has to be *assigned* symbolic valence, or created a new, as it were, by each individual, in some form of shared understanding. The symbolic function, therefore, implies psychical organization sufficiently differentiated to be able to infer, or attune to, symbolic *meanings*. Due to the complete distance between a symbol and its referent[s] only the symbol proper is capable of containing and expressing multilayered, complex meanings. Symbolic organization is the most distanced from the senses; the one that, through its medium, will *embody* most expressively what has been relinquished by the senses and transmuted through semiotic form: it is entirely of the mind, an instrument of abstraction, reflection, the *idea* of things. So, while signals can only alert, and signs, denote or indicate, the symbol can represent or *mean* anything at all.

The developmental continuum moves from biological — global affective -- *signals*, through *signs* (serving either indicative or denotive functions) to the formation of the symbol proper. These are not stages definitively arrived at but specific *functional forms* designating planes of mental organization that tend to crystallize favoring higher modes yet intermingle all the time and remain subject to regression. These developmental and aesthetic principles of semiotic progression correlate with micro-genetic advances in conscious awareness during the clinical process of ‘working-through’ in content-specific verbal exchanges leading to insight (Aragno, 1997, 2008). Naturally, this is a highly simplified summary of what are complex, interrelated, early separation-individuation and subsequent learning processes, tied to intellectual or artistic proclivities and environmental influence. We would not expect language, for instance, our most universal and expedient semiotic system, to sprout fully hatched from its pre-linguistic egg! Precursors of verbal signification are hard wired, inherent in the human disposition for dynamic schematization and pattern-matching: seeds of signification are sprouting long before

the first words are uttered. Signals, signs and symbols are expressed through many different media but only linguistic exchanges lead to conscious awareness. Although language is by no means the only or even the best semiotic vocabulary through which to translate *qualities* of human emotion and experience, for which music is far better suited, it is the semiotic system that provides denotive signs discrete, specific, and efficient enough, to bridge our separateness, and enable us to communicate with others expediently.

Building on this model, ‘Forms of Knowledge’ (Aragno, 2008) greatly expands and advances its underlying principles through a developmental study of pre- and semiotic transmissive modes and referential forms through the prism of our specialized dyadic, triadic, and group-psychoanalytic dialogues. Human communication in its *totality* becomes an empirical window into the many intrapsychic and interactive processes that we refer to vaguely under the broad and general term, the ‘unconscious.’ The inquiry addresses all interactional phenomena bi-directionally and *in process*, from our very beginnings, reconstituting semiotic processes that first capture, construct, and then crystallize our linguistically created realities, pushing much else, the unwordable, unthinkable, or unacceptable, out. Accordingly the study begins with three psychoanalytic assumptions, i) that *everything* in our contexts is to be taken as *significant*, with unconscious meaning of *some sort*, often replicating or transferred from another situation; ii) that many unconscious meanings are rooted in and expressed *through the body*; and therefore, iii) that forms of human expression and communication interpreted from this holistic, not exclusively linguistic, standpoint offer the best empirical viewing of ‘psyche’ for the study of mind. A psychoanalytic study of communication becomes a vehicle for observing how humans register, transmit, and communicate what is *in* and *on* their minds; what they are projecting and inducing, unconsciously, in others; and what they *feel now* about what *happened then*—the nature of accommodation, repression, transference, and memory.

The clinical task is to interpret unconscious meanings through an emergent, contextual process: the theorist’s to identify, classify and systematize their *forms*. This is therefore a multidimensional study filtered through the unifying template of a modern bio-semiotic model of mind, leading into the immensely complex polysemic domain of meanings, forms of reference, and sources of knowledge. In the physical sciences function follows form; in the science of mind functional-forms reveal *how* something is experienced. This functional role of form in psyche only becomes apparent when considering the dynamic interaction of many unconscious elements in relation to a whole, like a composition. The examination of interrelationships between function, form, and content, through time, provides a theoretical template for the architecture, or grammar, of human meanings which, in the book, is represented metaphorically by the multilayered analogue of an orchestral score.

A preoccupation with feelings, meanings, and form, therefore, threads through the entire work anchoring psychological manifestations firmly in their biological roots. All at once we find we have been embedded in a methodology that is also an *interpenetrative epistemology*, a dialectical means for uncovering *how* we come to know. The yields of its inquiries bifurcate into two branches each expanding human consciousness in different ways: the one, via analysis of the

personal unconscious, leads to therapeutic insight and change; the other displays the mediational progressions in dialogical processes involved in the transformation of experience into higher, symbolically referenced levels of verbal ideation.

Methodologically, psychoanalysis is interested in everything that is unconscious. This mandate is accompanied by a specified ‘attentional stance’, one of Freud’s (1912/13) few technical recommendations: the listening analyst should *bend* his own unconscious toward the other, like a telephone receiver, in order to register *all* forms of transmission. This fluid, open, ‘evenly-suspended’, non-judgmental attentional disposition has far reaching repercussions, one of the most important being its ability to generate forms of attunement between interlocutors that open up all channels of communication, including the deepest, most unconscious transmissive ones. With their interpretive focus on everything unconscious, psychoanalytic situations create ‘semantic fields,’ bio-semiotic spheres of considerable multi-directional influence wherein unconscious transmissions also occur without words, through dreams, fantasies, images, and emotional attunements. Under the general rubric of “Morphic Sentience” (knowledge through pattern- or image-attunement) and the concept of ‘morphic-resonance,’ I posit several forms of unconscious pattern-transmission, naming two of them: the first is totally undifferentiated, ‘Coenesthetic expression,’ the global, neuro-physiological, natural expressions which are present at birth: the second, revealing sensory-motor internalizations, is “Ideo-Motor replication,” whereby introjected dynamic-interactions are unconsciously replicated in toto, from all sides, indicating deep sensory forms of attunement. Although superficially superseded by linguistic reference, unconscious modes remain active subliminally, registering tone, intention, and deeper, emotional disposition.

The model of communication that is the centerpiece of “Forms of Knowledge” identifies pre-linguistic modes of pattern-transmission and provides semiotic analyses of conscious and unconscious verbal communication. Placing affects at the central core of human intercourse provides an organic base for a comprehensive overview of the morphogenesis of communicative competencies in a developmental continuum of non-discursive and discursive forms. This includes an examination of the pre-semiotic as well as semantic and referential factors involved in creating psychoanalytic semantic fields: an analyses of speech forms and functions; of narrative modes; and detailed discourse analyses of the clinical and supervisory situations. Our dialogues are discussed in terms of their predictable phases, levels and modes of therapeutic impact, and the specific emergent phenomena that occur in them. Using the metaphor of an orchestral score as visual aid, this epigenetic, multistratal developmental model of nonverbal and verbal communication identifies inter-active phenomena through which phylogenetic hypotheses can be reconstructed. These profoundly organic phenomena are particularly manifest in the formation, cohesion, and unconscious convergence-dynamics of analytic groups. Even with considerable semiotic overlay, layers of cultural norms and psychic defenses, these deep bio-psycho-social strata, probably hard wired, continue to play a critical role in social behavior and group processes.

Let me illustrate the applicability to group phenomena of some key concepts, beginning with “semantic fields” which encompasses the idea of a group ‘space’ describing the contours or membrane wherein group cohesion evolves. Initially defined by its purpose and function, a ‘semantic field’ – which can acquire enormous pattern-transmissive powers – is gradually generated by the members’ increasing familiarity with a ‘vocabulary’ in an overarching referential spread through which specific subject matter is addressed. This concept, which covers group member engagement at multiple levels of interaction, also accounts for the gradual emergence of thematic-convergence in dreams and joint metaphors in deeply unconscious strata, and emotional contagion and attachment processes generating the group’s cohesion over time. Each level in the bio-semiotic continuum is tied to a functional/form of interaction, from undifferentiated signal-modes all the way to highly abstract symbolic ideation. At the deepest, ‘morphic’, or *felt*, modes of interaction, the undifferentiated quality of emotive/cognitions underpinning empathic-attunement engender a synchronization of signal-patterns creating very powerful unconscious forms of connectedness. One could say that the less differentiated the functional/mode of attunement the more porous and receptive to unconscious frequencies is that channel. However, it is only through the unique semantic and referential perspectives, and interpretive activities, of psychoanalytic situations—which strive to re-open *all* channels of communication-- that such phenomena are specifically identified and their operative modes rise to the fore.

It will be useful here to include a few words about the neural substrate of ‘empathic-attunement’, specifically the implications of the recently discovered ‘mirror-neuron circuitry’ in tracing the deep roots of human interaction. Insofar as validation is always welcome the uncovering of a neural region involved in the automatic ‘mirroring’ of motor-emotive expressions by Vittorio Gallese provides corroborative neurophysiological anchorage for theoretical points arrived at by observation and conceptual inference alone, long before the ‘mirroring’ network was identified. Extrapolations from neurobiological data to semiotic process are delicate, more so since this research initially focused on perception and motor centers in the macaque monkeys brain (and subsequently on dancer’s non-verbal activity) whereas my orientation leans toward an holistic approach especially inclusive of the semiotic-linguistic, *strictly human*, overlay of biological processes. Semiotic processes cannot be ‘seen’ in brain studies; nor are they confined to any strict anatomical location or even cortical layer. They oblige us to study them through their many manifestations within, and between, ourselves.

Space allows for only a very brief summary of the essential themes of Gallese’s (2001, 2003, 2007) current contributions especially those involving the sociobiology of attachment, empathy, and learning, which bear directly on my own work. Gallese’s discovery of the ‘mirror neurons’ in the late 90’s, so named because the neural circuitry involved in deliberate (willed) action and experienced emotions/sensation, were found to become activated also when witnessing, or observing, similar emotions/sensations, in others. From this seed Gallese posits the possibility of a “whole range of different ‘mirror matching mechanisms’” (2003, p.171) in our brains, an hypothesis with far reaching potential.

One finding emerging from this research that struck me as particularly important is the homology between the monkey's F5 and Broca's area (associated with language in humans) as apparently sharing analogous functions: "Broca's region appears to be not only involved in speech control, but also, similarly to the monkey's area F5, in pre-linguistic analysis of others behavior" writes Gallese (2003, p174). These centers seem to bypass any representational or cognitive/linguistic system by directly "feeling" into others' states. Recognition of the perceived 'action, state or emotion,' goes straight to the sensory-motor matching state in the viewer, suggesting that the experience is underpinned by activity of a shared neural substrate providing instantaneous 'unmediated' understanding. This unmediated 'reading' of the other takes place by way of one of Gallese's (2007) central hypotheses, the idea of 'embodied action simulation' (known to us from Piaget as 'sensory-motor assimilation'). He differentiates automatic 'mimicry' from simulation occurring during motor *imagery*, the main difference being the trigger or motive; whether it is willed and deliberate or merely observed. Both activate parietal and premotor cortex networks in simulated action but each originates in different kinds of impulses; one is passive (and probably unconscious) the other deliberate and conscious.

This, I believe, reveals something very important about the human brain which suggests two things; i) it correlates with the difference we, in psychoanalysis, make between something that is perceived and internalized or enacted *unconsciously* (which includes the entire phase of early childhood) and what is learned or done consciously via semiotically mediated structuring of some kind; ii) it points to the origins of two different forms of *signification*, the indicative/denotive which leads to sign-systems, and the 'representational' which tends to *express* personal meanings. *Both, I submit, originate phylogenetically in our species-specific forms of emotional expression which provide a 'signifying template' directly exhibiting the inner state of another organism.* The basic repertoire has probably grown over millennia acquiring many new nuanced cadences which, with increased semiotic dexterity and modulation, may be used to diverse effects. The unmodulated expression of any emotion, for instance, generates a very different response from one that is mediated or one that is artificially exaggerated, as in mime or theatre. In humans the 'sign' function awakens a whole concatenation of signifying and symbolizing tendencies that clearly have had essential survival value. Rapid grasp of emotional messages woven into concomitant inter-active behaviors, and adequate response to them, are crucial forerunners to social adaptation and verbal communication. Relating the mirroring circuits to the human empathic response Gallese invokes the idea of 'the shared manifold of intersubjectivity,' a reciprocal mirror-matching mechanism by means of which we recognize others as being 'like us' in a communal dialectic of shared human experience.

With this concluding brief excursion into an aspect of the neurobiological substrate, in addition to the long phylogenetic shadow adumbrating the bio-semiotic model proposed above, I believe I have presented a comprehensive new paradigm for our metapsychology, so named to define our "**speculations about the origin, structure, function, etc., of the mind, and the relation between the mental and physical.**" (Webster's New World Dictionary, 1966, p. 925)

Mens Naturans: The Biosemiotic Turn

The discovery of a mirror neuron circuitry in both primates and humans suggests to me that communication was once based on forms of empathic attunement to another's inner, emotional 'state'; what was once internal to an organism would gradually have become externalized crystallizing into a few basic, highly visible and audible, species-specific signal-expressions out of which, in humans, communication through verbal signs evolved. This expressive template from which issue subsequent sign-developments, I submit, originates in the morphology of organic state-specific conditions. From a pre-verbal base of shared 'commonality,' pictorial representation, indicative signs, and speech would have emerged. This trajectory is recapitulated ontogenetically. We observe that from a relatively undifferentiated, yet exquisitely sensitive, mode of resonating-with the other through unspoken bidirectional attunement, there gradually appears a differentiated indicative gesture and then a first "word" serving the function of 'naming.'

Denotation is the distinctive referential characteristic of language, nourishing intellect and communication alike, for a word first uttered and taken inward, or decontextualized, becomes the mind's possession, a means of recollection and contemplation carrying both object and context within. Precisely because of the denotive quality of verbal reference – its capacity to single out and represent- it stimulates evocative memory, thought, and imagination, while its purposeful, disciplined use reinforces symbolic conceptualization. But the original *feeling* center, the sensory-emotive core engendering profound affiliation and union, to which we attribute intuition, the *gut* hunch, does not disappear: it may be eclipsed but not eliminated, and continues to underpin human experience in many ways. In fact, attempts to override this core, or disregard it, spell mental and cognitive disorder.

Now to the *Biosemiotic* turn: I realize that my use of the term 'Bio-semiotic' (coined quite independently from any knowledge of this field!) is fundamentally different from the meaning given it in *Biosemiotics*. My definition designates a continuum in human experience from 'natural' to 'sign/symbol-governed' meanings; in *Biosemiotics* it designates the sign *in* nature, the *signa naturalia* (Favareau, 2006), or the natural, biological sign. Inherent in this new field is a basic premise that "all living creatures are semiotic systems" (Barbieri, 2008, ix) so that processes of interpretation are fundamental aspects of the living world: Its challenge; to "naturalize biological information" (Barbieri, 2006, xi) and to incorporate into scientific thought the concept of biological *meanings*. At the heart of its working definition of 'sign', however, is Sebeok's (1972, 1986) triadic, *necessary*, condition for any semiosis -- a sign, a 'meaning' and its interpreter -- making *interpretability* (and hence "*an* interpreter") essential to semiosis. Adopting this dictum, in my opinion, narrows the full scope and potential range of phenomena accessible to this field of inquiry and hampers the reach of its findings and means of integration with other sciences.

I suggest, rather, taking a *functional* approach to the study of *all forms of inter-action*, reconceptualizing "**inter-action**" as the central, unique, and essential feature of organic Life. What lives - interacts. Vitality is *contingent* on interactions. This enables us to ask all important

questions: *how* does it interact? What type of interaction is it? What is its *functional form*? Is it a code, a trigger, a stimulus, a signal? If a signal, what kinds of receptors, sensors, or *senses*, does it stimulate and how is it registered? Is it referential, for it is referential *distance* that qualifies signs, and if so *what species* of reference is it? If not, it may be a communication but it is not a *signified* communication. Does this imply it is not *meaningful* or rather that we need new concepts, new terms for *different kinds of meanings*, for this is what the new epistemology revealed in “Forms of Knowledge” pointedly suggests.

My expertise, admittedly, is limited to the study of the human mind: however, given that ours is the mind from which all interpretations and definitions of natural phenomena issue, I believe it serves us well to begin by checking our own conceptual and linguistic definitions *themselves*: for they will determine how we observe and classify the data, and not the other way around. The foundations of ‘Forms of Knowledge’ rest on the idea that there are different ways of attuning to, or registering, *different kinds of information*; that we come to apperceive or interpret, and therefore *know*, different things via different sensory channels, each of which is optimally ‘fitted,’ as it were, to its subject-matter, and that we will understand their *meanings by attuning to their forms*. The interpenetrative epistemology stumbled upon in this work proposes a more open, non-prejudicial methodological approach to the study of bio-semiotic phenomena, without too many a-priori preconceptions, precisely so as to leave ample room for the observation of new facts and the coining of new terms fitted to new forms. Such an approach would study each mode *bi-directionally*, in terms of its functional-form, not omitting to factor in the pivotal role of human responsiveness *in its totality* as part of the inquiry.

Since the mind that isolates natural or cultural signs *qua signs* is also the mind that decodes and interprets the nature of their messages, in the interest of systematic study and classification I believe it useful to honor certain distinctions made in the above between an array of diverse transmissive and communicative modes. I would advocate taking from the above described continuum its underlying logical principles regarding morphic versus signaled or signified modes of communication/reception and build from this base a classificatory system reflecting the varieties of natural and signified *bio-semiotic* interactions. In this way we may realize the brilliant and prescient Lord Russell’s (1914) conceptual vision, that “What is feasible is the understanding of general forms” (p.109). The “scientific philosophy” (p.109) he envisioned would concern itself with the “analysis and enumeration of logical forms, i.e., with the kinds of propositions that may occur, with the various types of facts, and with the classification of the constituents of facts.” (p.108) In *Biosemiotics*, the constituents of relevant facts have to do with *all forms* of vital inter-action, beginning with molecular organic codes all the way up to signals, indicative and denotive signs, and complex symbol-systems, *used* as referential tools. For this is where the line of continuity between humans and all other life on earth breaks off: that we devise, adopt, and *make use* of semiotic *instruments* to generate referential meanings that are removed from or lost to the senses, and thereby become mind.

Bibliography

- Aragno, A. (1997), *Symbolization: Proposing A developmental Paradigm for a New Psychoanalytic Theory of Mind*. Madison, CT: International Universities Press.
- (2008), *Forms of Knowledge: A Psychoanalytic Study of Human Communication*. Baltimore, MD: PublishAmerica Press.
- Bakhtin, M.M (1981) *The Dialogic Imagination*. ed M. Holquist. Austin: University of Texas Press
- (1986) *Speech Genres and other Late Essays*, eds. C. Emerson and M. Holquist: tr.V.W. McGee. Austin: University of Texas Press
- Barbieri, M. (2006) The Challenge of Biosemiotics. in *Introduction to Biosemiotics. The New Biological Synthesis Springer ix-xii*
- (2008) What is Biosemiotics? *Biosemiotics* 1:1-3
- Bateson, G. (1972) *Steps to an Ecology of Mind*. New York: Ballantine Books
- (1979) *Mind in Nature: A Necessary Unity*. New York: E. P. Dutton
- Breuer, J. & Freud, S (1893-1895) Studies on Hysteria. *The Standard Edition*, Vol.1. London: Hogarth Press, 1955 pp. 3-305
- Bruner, J (1969), *Child's Talk: Learning to Use Language*. New York: W.W. Norton
- Cassirer, E. (1874-1945) *Philosophy of Symbolic Forms*, 3 vols. Tr. W. Hendel. New Haven, CT: Yale University Press, 1953-1957
- Damasio, A. (1994), *Descartes's Error: Emotion, Reason, and the Human Brain*. New York: G.P.Putnam
- (2003), *Looking for Spinoza, Joy, Sorrow, and the Feeling Brain*. New York, San Diego, Toronto, London: A Harvest Book, Harcourt, Inc
- Darwin, C. (1872), *The Expression of the Emotions in Man and Animals*. New York: D. Appleton, 1899.
- Descartes, R. (1637), *The Philosophical Works of Descartes*, Vol.1, tr. L.S. Haldane & G.R.T.Ross. New York: Dover

Favareau, D. (2006), The Evolutionary History of Biosemiotics. In: *Introduction to Biosemiotics*. M. Barbieri. Ed. Springer, pp 1-67.

Freud, S. (1895) Project for a Scientific Psychology *The Standard Edition*, Vol.1, London: Hogarth Press, 1950 pp 295-397

----- (1900) The Interpretation of Dreams. *The Standard Edition* Vols.1V& V, London: Hogarth Press, 1953

----- (1901) The Psychopathology of Everyday Life. *The Standard Edition* Vol. XI, London: Hogarth Press, 1960

----- (1905) Three Essays on the Theory of Sexuality *The Standard Edition* Vol.VII, London: Hogarth Press, 1953, pp 135- 279

----- (1905) Jokes and their Relations to the Unconscious *The Standard Edition*, Vol. VIII, London: Hogarth Press, 1960

(1911/1913), Papers on Technique *The Standard Edition*, Vol.XII, London Hogarth Press, 1958 pp.91- 171

----- (1913) Totem and Taboo *The Standard Edition*, Vol. XIII, London: Hogarth Press, 1955, pp.1-161

----- (1914-1916), Papers on Metapsychology *The Standard Edition*, Vol. XIV, London: Hogarth Press, 1957. pp.117-258.

----- (1917), Introductory Lectures on Psych-Analysis. *The Standard Edition*, Vols. XV & XVI. London: Hogarth Press, 1963

----- (1920), Group Psychology *The Standard Edition*, Vol. XVIII, London: Hogarth Press, 1955, pp. 69-172

----- (1923) The Ego and the Id. *The Standard Edition*, Vol. XIX, London: Hogarth Press, 1961. pp 12-66.

----- (1930) Civilization and its Discontents *The Standard Edition*, Vol. XX, London: Hogarth Press, 1961, pp 64- 145

----- (1939) Moses and Monotheism *The Standard Edition*, Vol. XXIII, London, Hogarth Press, 1964, pp 7-137

----- (1940) An Outline of Psycho-analysis *The Standard Edition*, Vol. XXIII London: Hogarth Press, 1964, pp.144-207

Freud, E. Ed., (1961) *The Letters of Sigmund Freud*. Translated; Tania and James Stern. London: The Hogarth Press.

Freud, S. (1954) *The Origins of Psychoanalysis, Letters to Wilhelm Fliess, Drafts and Notes: 1887-1902*. Intr. by Ernst Kriss. Eds., M. Bonaparte, Anna Freud and Ernst Kris. Translated by Eric Mosbacher and James Strachey. New York: Basic Books: London: Imago Publishing Co.

Gallese, V. (2001) The “shared manifold” hypothesis: From mirror neurons to empathy. *Journal of Consciousness Studies* 8(5-7):33-50

----- (2003), The Roots of empathy: The shared manifold hypothesis and the neural base of intersubjectivity. *Psychopathology* 36(4) 33-50

----- (2007), Intentional attunement: The mirror neuron system and its role in interpersonal relations. Unpublished paper discussed at the Philoctetes Center, New York, 2008.

Goodman, N. (1984), *Of Mind and Other Matters*. Cambridge, MA: Harvard University Press.

Holt, R.R. (1962), A critical examination of Freud’s Concept of bound vs. free cathexis. *Journal of the American Psychoanalytic Ass.* 10: 475-525

----- (1976), Drive or Wish? A reconsideration of the psychoanalytic theory of motivation. In: M.M Gill & P.S. Holzman (Eds), *Psychology vs. metapsychology: Essays in memory of George Klein*. pp. 158-197. Psychological Issues (Monograph No.36).

----- (1981), The Death and Transfiguration of Metapsychology. *The Int. R. Psycho-Anal.*, 8: 129-143

----- (1985), The Current Status of Psychoanalytic Theory. *Psychoanalytic Psychology*, 2(4): 289-315

Jackson. Hughlings J (1931), *Selected Writings of John Hughlings-Jackson* 2 vols. Edited by James Taylor. London: Hodder and Stoughton: reprint edition, New York: Basic Books, 1958

Kuhn, T.S.(1962), *The Structure of Scientific Revolutions*. Chicago: University of Chicago Press.

Langer, S.K. (1942) *Philosophy in a New Key*, MA: Harvard University Press

----- (1967), *Mind: An Essay on Human Feeling*, Vol. I. Baltimore: Johns Hopkins University Press

----- (1972), *Mind: An Essay on Human Feeling*, Vol. II. Baltimore: Johns Hopkins University Press

- (1982), *Mind: An Essay on Human Feeling*, Vol.III Baltimore: Johns Hopkins University Press
- Levi-Strauss, C.(1964),*The Raw and the Cooked*. New York: Harper Torchbook, 1970
- Luria, A.(1966a), *Higher Cortical Functions in Man*. New York: Basic Books
- (1966b) The Functional Organization of the Brain. *Sci. Amer.*,207:66-78
- Marshack, A.(1972), *The Roots of Civilization*. New York: McGraw-Hill
- Mahler, M. Pine, F.& Bergman, A.(1975), *The Psychological Birth of the Human Infant: Symbiosis and Individuation*. New York: Basic books
- Maturana ,H.& Varela,F. (1980), *Autopoiesis and Cognition: The Realization of the Living*. Dordrecht, Netherlands: D.Reidl
- McCullough,W.(1965), *Embodiments of Mind*. Cambridge, MA: MIT Press
- Patee` ,H.H (2006) The Necessity of Biosemiotics: Matter-Symbol Complementarity. In *Introduction to Biosemiotics*. Springer, pp115-132
- Piaget,J(1923), *Language and Thought of the Child*. New York: Meridian, 1955
- (1962) *Play, Dreams and Imitation in Childhood*. Tr. C.Gattegno & F.M.Hodgson. New York: W.W.Norton
- & Inhelder (1969), *The Psychology of the Child*. New York: Basic Books
- (1970), *Genetic Epistemology*. New York: Columbia University Press
- Polanyi,M.(1964),*Personal Knowledge*. New York: Harper& Row
- Rapaport, D (1944), The Scientific methodology of psychoanalysis. In: *The Collected Papers of David Rapaport*, ed. M.M Gill. New York: Basic Books 1967, pp. 165-220
- Russell, B (1914), On scientific method in philosophy. In: *Mysticism and Logic and Other Essays*. Baltimore: Penguin, 1953, pp 95- 119
- Sebeok, T.S.(1972), *Perspectives in zoosemiotics*. The Hague: Mouton
- (2001), Biosemiotics: Its Roots, proliferation, and prospects. *Semiotica*, 134:61-78
- Sterba, R. (1968), *The Psychoanalytic Theory of Libido* Robert Bruner, Inc.
- Sulloway, F.J (1979), *Freud, Biologist of the Mind*. New York: Basic Books, Inc

- Turner, V.(1974), *Drama, Fields, and Metaphors: Symbolic Action in Human Society*. Ithaca,NY: Cornell University Press
- (1980),Social Dramas and stories about them. In: *On Narrative*, ed.W.J.Mitchell, Chicago: University of Chicago Press, pp137-164
- (1982), *From Ritual to Theatre: The Human Seriousness of Play*. New York: PAJ
- Vygotsky, L. (1960), *The Development of Higher Mental Functions*. Moscow: Izdatek'stvo Academi Pedagogicheskikh Nauk. (*in Russian*)
- (1978), *Mind in Society: The Development of Higher Psychological Processes*, eds M.Col, V.John-Steiner, S.Scribner, & E.Souberman. Cambridge, MA: Harvard University Press.
- (1981), The Instrumental Method in Psychology. In: *Vygotsky and the Social Formation of Mind*, by J.V.Wertsch. Cambridge, MA: Harvard University Press, 1995
- Von Bertalanffy, L. (1968), *General Systems Theory*. New York: Ballantine
- Werner, H.& Kaplan,B.(1963), *Symbol Formation*. New York: Wiley, 1967
- Whitehead, A.N.(1927), *Symbolism. Its Meaning and Effect*. New York: Fordham University Press
- Wilson, E.O (1975) *Sociobiology: The New Synthesis*. Cambridge, MA: Belknap Press of Harvard University Press
- (1978), *On Human Nature*, Cambridge, MA: Harvard University Press
- (1998), *Consilience: The Unity of Knowledge*. Vintage Books, NY: Random House, Inc.
- Wittgenstein,L.(1922),*Tractatus L<ogico-Philosophicus*,tr. D.F.Pearce&B.F.McGuiness.London: Routledge& Kegan Paul
- Webster's New World Dictionary. (1966), Cleveland, New York: The World Publishing Company.

