

## *A Work in Progress*

# Some Preliminary Reflections on the Biological Substrate of Meaning-Making

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In the Introduction to these *Proceedings*, I made the statement that:

‘Jung’s theory of complexes is paradoxically the most biologically embedded of all the psychoanalytic models. But the Jungian movement has yet to realise it fully.’

This is a provocative assertion, but engage with us as we deploy an exploratory argument in which:

- we shall outline a core model of therapeutic intersubjectivity, which has the making of connection and new meaning at its heart;
- we shall then look at the neurobiology of meaning-making (apophenia);
- we will sketch a picture of the Jungian opus which has meaning-making as a central concern both in its historical provenance (Jung’s early psychophysiological Word Association research), and in its *telos*;
- and we shall present some preliminary fMRI findings that expand our understanding of the neurobiological substrate of the Jungian complex.

There is not enough space here to deploy the various arguments in the detail they require. In fact, all of the above propositions are points of departure for substantive studies, and this discussion must be understood as very much a work in progress; a point of view.

### SOME CORE CONCERNS IN CONTEMPORARY PSYCHOANALYTIC/DEPTH PSYCHOLOGIES

In the last 20 years, convergent developments across the many strands of contemporary psychoanalytic thought have brought us to a point where we can confidently articulate some of the basics of good clinical psychoanalytic practice. What is required is a kind of double consciousness; an ability to track one's own process while simultaneously tracking the patient's, *in interaction*. Furthermore the therapist has to bring an *appreciative* component; and there also has to be a capacity for *reverie*, a non-linear mind-state akin to play. All this emerges optimally within an appropriate *container*.

When all the above is in place, the patient/analysand has the opportunity to progressively develop, in and through this interaction, a sense of their own self (stream of consciousness), and an empathic sense of the *other*. Though seemingly simple enough (every good mother does this with her baby and infant), it can be a deeply challenging therapy task, taking years of effort (on both sides). But it is possible. Here in Australia, Neville Symington and Russell Meares have reviewed the underpinnings of this basic position; Meares especially from the perspective of those recent neurobiological and developmental psychological researches and understandings that give it powerful cross-validation (Symington, 1986; Meares, 2000). It is worth remembering at this point that Russell Meares' work on the 'conversational method' had its genesis in the work of British Jungian Analyst Robert Hobson (Hobson, 1985) who was Russell's mentor in the UK.

But can we take this paradigm one step further? The powerful concept of *emergence* (the way new and unexpected properties arise from patternings of simpler elements) is one of the major themes in contemporary psychoanalysis, especially in its application to our understandings of developmental process, psychopathology, and psychotherapeutic interactions.

### **‘EMERGENCE’, THE DANCE OF THE ‘ENIGMATIC SIGNIFIERS’, AND JUNG’S ‘TRANSCENDENT FUNCTION’**

‘Emergence’ is a term that signifies how new and unexpected properties arise from the interactions of simpler entities. Thus the elements hydrogen and oxygen have very different properties from H<sub>2</sub>O, water. This useful principle has been extended to the biosciences, the mathematics of artificial intelligence, and to contemporary philosophy. Marvin Minski (Minski, 1986) has extended it further to models of mind and, more recently, the principle of ‘emergence’ has gained currency in the contemporary psychoanalytic discourse (Cambray, 2002).

But the psychoanalytic discourse is a ‘model of mind’ with a concept of the *unconscious* at its heart.

Broadly speaking, we all emerge from an unconscious, in the widest senses of this term (not just the dynamically repressed). Some of this is, in principle, utterly irreclaimable. Who can claim an experiential awareness of the function of their spleen? Their COMT genes? Some of it, the pre-verbal, sub-linguistic (the patterns, inherited and acquired, of the mid-brain, the hypothalamus, the hippocampi and the amygdala), profoundly affects experience and behaviour, but percolates to cortical awareness in very limited ways, only partially retrievable, and only poetically expressible at best.

There is a term in current psychoanalytic thinking that captures something of the way in which this subliminality unpacks in the therapeutic encounter. It is the term *enigmatic signifiers*, coined by the psychoanalysts Frosh and Pontalis (Frosh, 2002). It refers to the subliminal cues that are being thrown off all the time by both partners, often at variance with declared positions and intentions.

The psychoanalytic tango is a dance between the *enigmatic signifiers* of each partner. All of this patterning, conscious or not, decants into the therapeutic encounter. Mostly, these patterns have a counterproductive fixity; the stereotypic projective driven-ness that Jung called the 'complex'. And mostly, the analytic dance itself is formulaic, a repetition of those familiar transferential/countertransferential quadrilles that brought one to analysis in the first instance. However, just occasionally, something new, something emergent, can arise. And, whereas in the physical world new physical properties emerge out of combinations of simpler elements, in the mental world, what (hopefully) emerges in the analytic encounter is new meaning. And new *meaning* can heal.

The discerning Jungian reader will by now have recognised the above as a recasting of Jung's central therapeutic principles of 'Conflict of Opposites' and 'Transcendent Function' into a more contemporary mode. Jung's principle was embedded in a 19th Century Hegelian dialectic of 'thesis' versus 'antithesis', or *conflictio oppositorum*. But the new idiom of emergence has one big advantage. Unlike Hegelian philosophy, the principle of emergence originated in the physical sciences, and is inherently more amenable to physical investigation.

## EMERGENCE, MEANING AND PSYCHIC STRUCTURE

If ‘emergence’, the thrust towards new meaning, and its arising, is at the heart of therapeutic transformations in the psychoanalytic encounter, we might be prompted to ask, what is the nature of its biological substrate? We often forget that a similar curiosity about the biological underpinnings of the unconscious drove Jung’s early researches. Jung’s theory of the complexes and archetypes, and his preoccupation with the search for meaning arose, at least in part, from his exposure to the French neurologist Charcot’s demonstrations of hysterical dissociation states, and from Jung’s work with the word association experiment, that early research exercise in physiological psychology which demonstrated so palpably (by increased reactions times, increased skin conductance, altered heart and breathing patterns) that there were unconscious dynamic ‘structures’, associative nodes of over-determined meaning that Jung called the ‘complexes’, that shape the way in which we experience ourselves and the world and, in turn, influence the way other associations are made.

## JUNG’S PSYCHOLOGY OF APOPHENIA

Jungian psychology can thus be [re?]-construed as an associationist psychology or, more precisely, a psychology of apophenia - usually defined as the experience of seeing meaningful patterns or connections in random data. The term was first used by Klaus Conrad (Conrad, 1958) to describe the ‘unmotivated seeing of connections....[accompanied by] ....an ...experience of abnormal meaningfulness’. Apophenia is sometimes regarded as psychopathological, but clearly cannot be so totally, otherwise we would have to relegate all discoveries? constructions? of patterning to irrelevance and the madhouse.

Giegerich has argued that in a post-modernist world, the search for meaning is the weakest link in Jung’s opus (Giegerich, 2004). And yet, as advances in our understanding of the neurobiology of subjective experience develop, this

‘search for meaning’ may again prove its strongest element, not so much as that search for underlying capital M ‘Meaning’ that Giegerich criticises, but as an enquiry into the meaning-making process itself.

Some of you will be familiar with the work of Brugger at the Zurich University Hospital. In one particular study (Mohr, Brugger et al., 2004) he describes how normal subjects, given an L-Dopa/benserazide (formulated to produce a dopamine surge and sustain it), displayed absurdly high levels of magical ideation. Many of you may also realise that apophenic experiences are a common thread in a broad variety of conditions. These include a wide range of psychiatric disorders, wherein the firm distinctions between schizophrenia, schizotypy, bipolar affective disorder, borderline personality disorder, Post Traumatic Stress Disorder, and the various drug-induced psychoses are being called into question (Mohr, Brugger et al., 2004, p. 2; Angst, 2007) even in the Anglo-Saxon psychiatric domain (Mellsop, 2007). All these conditions carry, in various ways, an element of apophenic disturbance.

But apophenia is also to be found in normative states. Adolescence in particular, with its pre-frontal brain network pruning and identity re-organisation, can be said to be a developmental phase of normative apophenia (Damman, 2004). A wide range of normative life experiences (grief, trauma, love and infatuation, near-death, psychotic transference, but also creative and artistic inspirations, moments of numinosity, etc.) come with an intrinsic apophenic element.

However, we now also know that the most fundamental motivating system common to all vertebrates is the so-called ‘seeking (curiosity and reward) system’ described by Panksepp (Panksepp, 1998). The ‘seeking - reward’ system includes the mesocortical-mesolimbic dopamine mediated apophenic ‘meaning-making’ system described earlier, and its projections to the endorphin mediated fronto-hypothalamic systems familiar to us from the rat self-stimulation pleasure-centre work of James Olds (Olds and Milner, 1954). It

seems that we are hard-wired to seek meaning; make connections. And when we make those connections, the resultant dopamine surge in turn releases endorphins. This is a two-way system. Dopamine increases curiosity and meaning-making; curiosity and meaning-making increases dopamine activity. The accompanying affect can be experienced as rapturous, numinous even.

How might this be connected with Jung's theory of complexes and archetypes?

Apophenia has not escaped the attention of Jungian scholars, and Jeffery Mishlove in Los Angeles (Mishlove, 2007) has proposed that notions of archetypal synchronistic resonance can be invoked instead of models of dopaminergic neuropathology, to 'explain ostensible paranormal experiences that can neither be accepted as literally constructed nor dismissed as mere artefact or error'. But the two models (metapsychological and neurobiological) are not irreconcilable. This reconciliation is precisely the task of the new 'neuropsychanalysis' spear-headed by the psychoanalyst/neuropsychologist Mark Solms (Solms and Turnbull, 2002).

## **THE NEUROBIOLOGY OF THE DREAM PROCESS AND THE COMPLEXES**

The reader might also know that the Dopamine 2 pathways mentioned earlier also serve dream process in an essential way. Mark Solms (Solms *ibid.*), in his attempt to arrive at the functional neurobiology of the dreaming process, observed that people who have had bilateral mesial-prefrontal leucotomy (i.e. cutting away a vital part of the D2 pathways) retained REM functions but could no longer dream! But there was another region that Solms also describes as essential to dream production, the temporo-occipito-parietal confluence.

From a Jungian perspective, we might say that dreams are the theatre of the complexes, the stage upon which complexes interact. It makes some

sense, then, that recent work in Australia on the fMRI correlates of the Jungian complexes (Petchkovsky et al., 2007) is beginning to suggest that the complexes themselves, those nodes of affect-laden meaning, involve the temporo-occipito-parietal confluence, Solms' *other* essential dream circuit (Solms, *ibid.*). When a complex is activated, part of the dream circuitry is also activated.

The temporo-occipito-parietal confluence, the so called 'God Spot' of the human brain, is also known to be the mediator of transcendent and heautoscopy (out of body) experiences. Could this, therefore, have something to do with the way in which the larger Jungian transpersonal Self unpacks into a more limited (egoic) human awareness? And indeed, our preliminary fMRI results (Petchkovsky et al., 2007) also show that mesial prefrontal and anterior cingulate brain areas associated with ego function (agency, a sense of individuality) light up in a 'complexed' reaction.

## JUNG IN THE 21ST CENTURY

What is the Jungian opus about, if not:

- the search for *meaning*;
- *synchronicity* and other meaningful connections;
- experiences of *numinosity*, ecstasy, spiritual encounters;
- *dreams* and dreaming;
- *creativity*;
- the *complexes* and associationist/dissociationist psychodynamics and psychopathology;
- *psychosis* and its misattributions of *meaning*;
- and how all these might interact in the 'alchemy' of the *therapeutic encounter*, and the healing work of the *transcendent function*.

And as the 21st Century thrust to understand ever more closely the biophysical substrate of subjective experience (including the process of meaning-making at all the above levels) gains momentum, the Jungian movement would seem strategically positioned to play an important part, if only it will engage actively.

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