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The Brain has a Mind of its Own

Attachment, Neurobiology, and
the New Science of Psychotherapy



KARNAC

living the mind

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INTRODUCTION

Freud's most creative years, as he moved from the seeming certainties of pre-twentieth-century science to the modernistic project of psychoanalysis, paralleled and pioneered the cultural shifts of the new century. Our millennium has seen a return to a mechanistic study of the mind, based on brain imaging and artificial intelligence. My aim in this book is to explore the implications of this neuroscience revolution for psychotherapy, and to argue that psychoanalysis still has much to contribute to our understanding of what it is to be human. What I'm attempting should be thought of as an *essay* – in the sense of effort or trial – encapsulating a personal angle on a topic.

We now know beyond doubt that psychoanalytic psychotherapy produces significant and sustained psychological changes for people suffering from psychological distress (e.g., Leichsenring, 2008; Shedler, 2010; Taylor, 2015).

But the underlying *mechanisms* – what it is about therapists, patients, and their co-created therapy which produces change – remain mysterious (Wampold, 2015). There is no shortage of theories: the therapeutic alliance, empathy, mutative interpretations, cognitive restructuring, restoration of family hierarchy and communication channels, unconditional positive regard. The answers probably include all of the above, and more. But, for many reasons, including the difficulty of meaningfully fitting psychotherapy into a randomised controlled trial paradigm, and “allegiance effects” (Kim, Wampold, & Bolt, 2004), where researcher’s bias – or transference – unconsciously affects their findings, however much they strive to counteract this, the evidence remains equivocal.

The processes implicated in psychotherapy are multiple: the psychotherapist herself, her personality and skill, the character and motivation of the patient, the nature and severity of the illness, the model, duration, and frequen-

cy of treatment, and the social context within which therapy is practised. Given this complexity, linear explanations – if therapists do or say this, then that improvement will result – are unlikely to account for the phenomena (Masterpaqua & Perna, 1997). The famous “dodo bird verdict” (Budd & Hughes, 2009), “All have won and everyone shall have prizes”, and the integrative meta-model perspective it implies, still holds firm. But complacency is contraindicated: although therapy undoubtedly can do good, it does not succeed in all cases – around 50–60 per cent of patients improve, 10 per cent deteriorate, while at least 30 per cent remain roughly where they were when they started (Lambert, 2013). For publicly funded therapies, allocating resources to ineffective treatment is wasteful, and for therapists it gives their beloved discipline a bad name.

The situation is not unlike that faced by Darwin when he published *On the Origin of Species* in 1856 (Holmes & Slade, 2017, 2019).

Using qualitative evidence from the fossil, geological, and his own and Wallace's observational record, he intuited how species adapt and evolve by natural selection. But Darwin's knowledge of inheritance went no further than the folk understanding that offspring both resemble and differ from their parents. Pre-Mendel, pre-Huxley, pre-Watson & Crick, pre-CRISPR, he was entirely ignorant of the genetic mechanisms involved. Psychotherapy is similarly in the dark about its own "DNA". This book's project is to argue that advances in neuroscience point to new understandings of how psychotherapy produces psychic change.

My starting point is a new paradigm, the *Free Energy Principle* (FEP), which has swept through academic psychology and brain research but which, a few pioneers excepted (e.g., Connolly, 2018; Hopkins, 2016; Mellor, 2018; Moutoussis, Shahar, Hauser, & Dolan, 2018; Smith, Lane, Nadel, & Moutoussis, 2019a; Smith, Lane, Parr, & Friston, 2019b; Solms, 2019), has

had little impact within the world of psychotherapy. I will gradually try to unfold the full nature and psychotherapeutic implications of FEP, but start with a summary of its main contours. Key concepts are italicised.

Energy in FEP is not a physical phenomenon like heat, or electromagnetic radiation, but a superordinate explanatory category, akin to gravity (cf. Connolly & van Deventer, 2017), with both mental and physical connotations. FEP is a *principle* or framework for understanding the fundamentals of psychic life, conscious and unconscious, analogous, and not unrelated to, Freud's pleasure and reality principles.

According to the FEP, the brain's task is to select from, attend to, shape, and *maintain homeostasis* in the face of the streams of incoming neural energy from both its sense organs and its *interoceptive* and proprioceptive internal milieu. It does this by *predicting*, "top-down", on the basis of previous experience, the likely meanings of this "bottom-up" input. These predictions

follow the mathematics of the eighteenth-century cleric Thomas Bayes, and are thus known as “*Bayesian*”. The ever-changing discrepancies between prediction and sensation, between our *generative models* of the world and reality, activate *Prediction Error Minimisation* (PEM), in which the brain “instructs” itself to modify *prior* models of the world in the light of experience, whereby they become *posteriors*, and take *actions* which improve precision, *clarify ambiguity*, and align input with expectations.

From a psychotherapeutic viewpoint, interoceptions (i.e., bodily feelings) are especially important because they underpin *affective life*. In general, prediction errors – the discrepancies between what we want/expect and what our senses tell us is the case – are experienced as “bad” or painful, thereby motivating their minimisation. Conversely, when expectation and experience align, we feel “good” or happy. The psychological distress that brings people for psychotherapeutic help can be conceived as chronic

states of unresolved prediction error. The aim of psychotherapy is to redress these by mobilising the capacity for action and model revision.

In FEP, energy is either *free*, or *bound*. Free energy reflects the ever-changing and potentially chaotic nature of the impact of the environment on the physical, psychological, and interpersonal self. Energy's role is therefore *ambiguous*: it provides the vital information and sustenance needed for our evolutionarily derived tasks of adaptation, survival, and reproduction, and arguably forms the basis for creativity, but, unbound, can overwhelm the unprepared nervous system. The need to find and bind free energy is what motivates us, what "makes us tick", what makes us exploit what we have, and explore and want to know more, and to think up better world models; failure to do so is demotivating, degenerating, and depressing.

All this has psychoanalytic resonances. Freud first proposed an interplay between free and bound energy (or Q as he symbolised it)

within the mind/brain in his abandoned and unpublished “project” (Carhart-Harris & Friston, 2010; Freud, 1950a) which he titled “psychology for neurologists”. As psychoanalysis evolved, the Q-concept transmuted into *libido*. Through cathexis, or *binding*, libido invests its objects with desire, leading in the short or long run to pleasurable discharge (Freud, 1911b, 1920g). In Freud’s schema, energy/libido unbound, especially in the shape of *incestuous* desire, has to be held at bay by primal repression (Barratt, 2019), whose lurking untamed presence makes the human subject inherently vulnerable to neurosis.

The FEP and Bayesian model are the brain-children of Karl Friston (2010) and his many colleagues (e.g., Clark, 2016; Hohwy, 2013; Hopkins, 2016). Note that “Fristianity” is primarily a statistical and mathematical schema. Thanks (or, rather, unthanks) to my mathematical limitations, this exposition is entirely prose-bound, a constraint which critics might legitimately compare with trying to make sense

of cosmology or quantum physics without using equations (it can be done, see Rovelli, 2017).

The plan of the book follows. Chapter 1 lays out the intellectual origins and current state of FEP. For the PEM uninitiated this first chapter may be hard going, but be reassured: Chapter 2 shows how the apparently abstract and cognitive slant of FEP resonates with everyday experience, and with psychoanalytic thinking. Chapter 3 brings in the role of attachment, and in our hyper-social species, how PEM is typically done collaboratively, but how insecure forms of attachment can jeopardise this, so exposing potential sufferers to failure of PEM, or energy unbound. Chapter 4 uses an FEP perspective to look at the kinds of difficulties and diagnoses which bring people for psychotherapeutic help. Chapter 5 takes the specific procedures of psychoanalytic work – dream interpretation, free association, and the ambiguities of transference – and shows how they uncouple top-down from bottom-up automaticity, enabling scrutiny of why and where

PEM is problematic. Based on FEP, Chapters 6 and 7 discuss therapist–client attachments, the conversations they engender, and how they can help unravel stuck PEM procedures. Chapter 8 summarises the implications of FEP for psychotherapeutic work in the real world of the consulting room. I conclude with a brief glossary of FEP-related terms which I hope will help readers new to this novel conceptual universe.

In addition to acknowledging maths-deficit, a few other caveats are needed. I shall say much about “conversation” between top-down representations and bottom-up sensations, and the role of language as a mediator between them. This hierarchy reveals how language structures thought, implying dominance/submission, while the thrust of the essay is a plea for the health-giving properties of more equal, “democratic” interchange between the sensual and the representational (cf. Bollas, 2019).

I have also felt free to select between cultural givens. Thus: in equipoise, the feminine

Introduction

pronoun is preferred; the terms client and patient are used interchangeably; psychotherapy is sometimes meant in a generic sense, but usually to refer to its psychoanalytic varieties. Finally, having worked daily with psychological pain, delusion, and confusion, I endorse Hopson's (2019) aperçu that, had King Lear, sensing incipient dementia, cried out "*Oh let me not suffer from mental health issues, sweet heaven*" a vital, if painful, truth would have been lost!

1

The Free Energy Principle

Gabbard and Ogden (2009), perhaps unconsciously echoing *Totem and Taboo* (Freud, 1912–13), describe the paradoxical post-qualification trajectory for members of the psychoanalytic clan as having both to “kill the father” and to “honour one’s ancestors”. In that spirit, my exposition of FEP is part homage to Freud, part search for a post-psychoanalytic paradigm. Newton famously acknowledged, “*If I have seen further it is because I have stood on the shoulders of giants.*” Before describing FEP, I honour the progenitors whose ideas form the background to our story.

FIVE FOUNDING FATHERS

Contemporary neuroscience starts from the work of Hermann von Helmholtz (1821–1894), polymath, physician, physicist, proponent of the conservation of energy, pioneer of the ophthalmoscope, and tutor to Freud’s mentor, Ernst Brücke (Bernfeld, 1944; Dayan, Hinton, Neal, & Zemel, 1995). Three of Helmholtz’s ideas are especially relevant to our discussion. First, much as Helmholtz admired Goethe as a poet, he and his group rejected soulful romanticism in favour of the scientific method and, when it came to the brain/mind, to a strictly monistic materialistic outlook.

Helmholtz saw the brain as a hierarchical “inference machine” (Badcock, Friston, Maxwell, & Ramstead, 2019) in which bottom-up sensations (initially from sensory epithelia) are appraised and interact with top-down cortex-derived constructs and meanings. This hierarchical model also applies to “all stations between”, meaning intermediate levels of brain function in which