

"The *Project*, or rather its invisible ghost, haunts the whole series of Freud's theoretical writings to the very end."

JAMES STRACHEY

# Freud's 'Project' Re-assessed



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&  
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"Our purpose is to organize in a current theoretical frame concepts initiated in the *Project* and thus provide a *Preface to Contemporary Cognitive Theory and Neuropsychology.*"

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FREUD'S  
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RE-ASSESSED

*Preface to Contemporary Cognitive Theory  
and Neuropsychology*

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For some months in the year 1895 Sigmund Freud was seized by a creative spell in which he tried to systematize his basic ideas of the functioning of the human mind, in particular of its neuropsychological mechanisms. He wrote out his views and sent the manuscript to his friend Wilhelm Fliess, to which circumstance we owe its preservation, for it was not published till posthumously in 1950.

Though Freud gave the manuscript no title he had referred to it in a letter to Fliess as the 'Psychology for Neurologists'. The editor of the English translation named it the 'Project for a Scientific Psychology' and it is usually referred to by psychoanalysts as the *Project*, the name we use in the title of our book.

Its importance lies in the fact that it contains explicit formulations and definitions of many central concepts and terms of that branch of psychoanalytic theory known as metapsychology, concepts and terms that Freud continued to use throughout his life but never again defined as explicitly and comprehensively.

We have the remarkable situation then that these important definitions and formulations are to be found in their clearest form in an early unpublished work. Our purpose is to use these explicit formulations to clarify much that is otherwise obscure in the received metapsychology, and thus to illuminate its relationship to contemporary cognitive theory and neuropsychology.

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# PROLOGUE

During the 1960s psychology experienced a revolution. Trends of half a century were sharply reversed and issues that had been ignored during this period suddenly re-emerged full force. Behaviouristic procedure had lost touch with the intrapsychic world that feeds most people's interest in the field. The revolutionary turn was that academic experimental psychology, which had become comfortably operational and functional in its behaviourism, turned cognitive, structural, intentional, and subjective.

Yet in the clinical realm behaviourism resulted in the development of what is now the influential field of behaviour therapy. One may perhaps debate whether in fact the principles which gave rise to behaviour therapy actually operate to produce its results, but it is clear that academic cognitive psychology has as yet failed to venture *any* clinically relevant theory.

Our concern in the present work is with the development of a cognitive and control theory which could become clinically relevant. Academic cognitive psychology has dealt with verbal coding, with pattern recognition, with control processes such as attention and intentional performance, and with the organization of memory and thought. The insights obtained provide a wealth of principles to be applied to clinical problems.

However, an important problem must be faced in making such applications. Whereas behaviouristic psychology had an apparently clear theoretical field in which to develop its clinical applications, cognitive scientists will find in classical psychoanalysis and all of its offshoots a venerable psychology formulated on its own terms. Unfortunately, the formulation includes large segments (the meta-

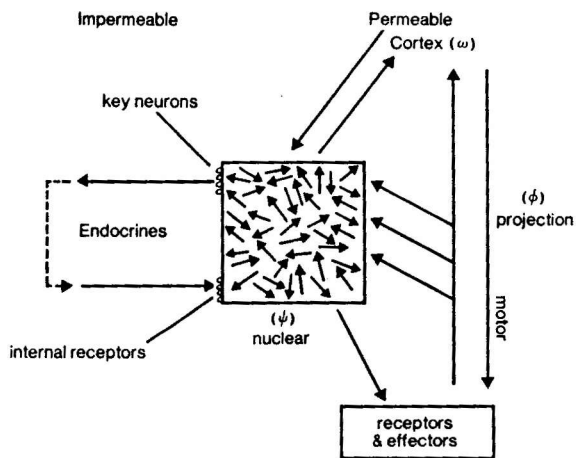
psychology, see below) that appear to be couched in pronouncement rather than observation and experimentation. This criticism does not deny the spirit of inquiry which has always characterized psychoanalysis. We refer rather to its relative isolation from contemporary scientific procedure and data.

Quite separately, coming from different disciplines, we found what we believe to be a way to deal with these problems. Our way proposes no completely new approach but rather returns to the roots of the problem. As we shall see, we agree with those who distinguish two bodies of cognitive formulations in psychoanalysis – the clinical theory and the metapsychology. Clinical theory, better labelled ‘psychology’ (though Freud originally used the term psychology for what is now called metapsychology), encompasses those formulations derived from observations in the analytic situation and stated in the intentional language of motivations and meanings; while metapsychology describes the *mechanisms* of such mental functioning. In contemporary psychoanalysis, the clinical and metapsychological formulations have often become confused, and Gill (1976) has urged their separation elsewhere. We make a beginning in disentangling these confusions in this monograph by an exploration of the roots of the metapsychology.

Our analysis shows that Freud initially formulated the mechanisms of mental function on the basis of his biological and neurological knowledge. He then chose, for a variety of reasons, to leave these neurobiological foundations implicit – indeed on occasion to deny their existence. Nevertheless he kept the mechanisms basically intact. But deprived of their roots and explicitness, the mechanisms became isolated from contemporary developments in science and, especially in the hands of post-Freudian psychoanalysts, became elaborated into a speculative tangle of concepts and casuistry. Thus when we came across the original formulations, published posthumously as the *Project for a Scientific Psychology*, we felt marvellously refreshed. Opacities and conceptualizations that had defied analysis were clarified and, most importantly, these conceptualizations were seen tied to the then existing body of scientific knowledge and not arising *de novo* from Freud’s fertile imagination. The concrete neurobiological hypotheses in the *Project* are subject to testing and modification in the light of new findings and alternate conceptualizations.

So we took on the job of re-viewing the *Project* in order to display the roots of metapsychology and to reappraise them. We argue that the metapsychology is a neuropsychology that can be modified in terms of current neurophysiology; that the regulatory principles are better





Stylized representation of the 'machine' or 'model' of psychological processes presented in the *Project*.

One evening last week when I was hard at work, tormented with just that amount of pain that seems to be the best state to make my brain function, the barriers were suddenly lifted, the veil was drawn aside, and I had a clear vision from the details of the neuroses to the conditions that make consciousness possible. Everything seemed to connect up, the whole worked well together, and one had the impression that the thing was now really a machine and would soon go by itself. The three systems of neurones, the free and bound state of Quantity, the primary and secondary processes, the main tendency and the compromise tendency of the nervous system, the two biological laws of attention and defence, the indications of Quality, Reality, and Thought, the (particular) position of the psychosexual group, the sexual determinant of repression, and finally the necessary conditions for consciousness as a function of perception: all that was perfectly clear, and still is. Naturally, I don't know how to contain myself for pleasure.

(Freud, Letter to Wilhelm Fliess,  
20 October, 1895,  
S.E., vol. 1, p. 285)

# INTRODUCTION

Our encounters with Freud's *Project for a Scientific Psychology*, his 'Psychology for Neurologists', have been filled with the same sense of surprise and excitement which Freud so movingly expressed in his letters to Fliess – and wonder that the 'thing' could really 'go by itself'. For, despite our different disciplinary backgrounds, we found that 'everything seemed to connect up', that 'the whole worked well together'. This enthusiasm for the *Project* has not left us in the decade and a half since we initially became involved with it.

Our purpose here is to show that psychoanalytic metapsychology should be seen to be in all its facets a biological cognitive control theory, based on an explicit neuropsychology. Our initial attempts to transmit our views to others interested in psychology and psychiatry produced a manuscript which a friend astutely labelled 'A very long book review, and not a very critical one at that'. The problem was that most readers felt that, despite evidence to the contrary, we had *interpreted* Freud when in *fact* we were quoting him. We concluded that few really care what Freud actually said in 1895, no matter how insightful he might have been for the time in which he lived. What our audience repeatedly asked was, 'What do *you* think of it on the basis of current knowledge; how is this relevant to *our* interests, here and now?'

Yet our conviction was and is that what Freud wrote in 1895 is important and needs exposition. We disagree with the commonly stated view that the *Project* is an ostensibly neurological document but really a psychological one cloaked in neurological terms and that Freud had the courage later to shed the neurological cloak of metapsychology. Nor do we believe the reverse, that the *Project* is, as Kanzer (1973) would have it, manifestly an essentially psychological document.

We believe that the *Project* is in the main a neuropsychologic document in which, as Kanzer in the same article sharply points out, the point of departure for the neuropsychological hypotheses often is a psychological observation, though, as Kanzer seems less clearly to recognize, it is also sometimes a neurological hypothesis. We also believe that the later metapsychology is ostensibly psychological alone but is in fact neuropsychology, with the neurology rendered implicit in contrast to its explicit statement in the *Project*.

As Strachey (S.E., vol. 1, p. 290) wrote: ‘. . . in fact the *Project*, or rather its invisible ghost, haunts the whole series of Freud’s theoretical writings to the very end.’

And again Strachey (Introduction to *The Interpretation of Dreams*) says:

It is no exaggeration to say that much of the seventh chapter of *The Interpretation of Dreams*, and, indeed, of Freud’s later ‘metapsychological’ studies, has only become fully intelligible since the publication of the *Project*. Students of Freud’s theoretical writings have been aware that even in his profoundest psychological speculations little or no discussion is to be found upon some of the *most* fundamental of the concepts of which he makes use: such concepts, for instance, as ‘mental energy’, ‘sums of excitation’, ‘cathexis’, ‘quantity’, ‘quality’, ‘intensity’, and so on. . . . The paucity of explanation of such basic notions in Freud’s later writings suggests that he was taking it for granted that they were as much a matter of course to his readers as they were to himself; and we owe it as a debt of gratitude to the posthumously published correspondence with Fliess that it throws so much light precisely upon these obscurities.

(S.E., vol. 4, pp. xv-xvi)

But these are not the only psychoanalytic concepts which find their first major systematic exposition in the *Project* and are illuminated by it. For the *Project* also not only introduces but also suggests neurobiological mechanisms for such major psychoanalytic concepts as the primary and secondary processes, the ego, reality testing, drive, and defence. While these concepts are also developed in later writings on essentially psychological grounds, the *Project* reveals some of the hidden neurobiological assumptions with which they remained intertwined. We believe that even their clarification on psychological grounds alone is illuminated by revealing these implicit assumptions.

But even that is not all. The *Project* contains a detailed motivational theory of thinking and an equally detailed theory of consciousness, the latter resting on explicit formulations of the mechanism of attention.

These contributions should rank with Freud's monograph *On Aphasia* (1891), reviewed by Otto M. Marx (1970), as classic contributions that continue to be pertinent to the contemporary wide interest of psychologists in cognitive processes.

Therefore we contend that study of the *Project* throws light on many hypotheses fundamental to later formulations and allows review and revision in the light of current neuropsychological knowledge.

In short, we believe that psychoanalysts will profit by sympathetic study of Freud's neuropsychology in the *Project* which is in important respects considerably more explicit than Chapter 7 of *The Interpretation of Dreams* (1900), their current source for metapsychological understanding. And we also urge all psychologists interested in cognitive processes to review the *Project* for currently relevant, comprehensive and detailed theories of thinking and consciousness.

How did we come to view Freud's *Project* as a document of value for our time and not just an historical oddity of closely packed interlacing ideas jotted down with urgency and then forgotten? Two ideas help immeasurably. The first, baldly stated, is the growing dissatisfaction in the psychoanalytic literature with metapsychological theory. This dissatisfaction led, as already mentioned, to a realization that the theory had now become a tangle of clinically oriented 'psychological' conceptions larded with 'metapsychological' mechanisms. Once the distinction had been attained it became obvious that metapsychological conceptions were in fact neuropsychological in origin, that they remained biological in spirit if not always in word 'to the very end' and thus open to constructive criticism and change.

The second idea is neurological and deals with the concept of cathexis. This idea (Pribram, 1962) states simply that cathexis is to be identified with local charges of neural energy, graded electrotonic excitations of nerve tissue, about which today's neurophysiology has a great deal to say (Pribram, 1971). This identity is adduced from the fact that Freud, in the *Project*, consistently opposes cathexis which 'fills' the neuron to the conducted nerve impulse which 'empties', discharges it. What follows is that the metapsychology, the psychoanalytic models of mechanism are therefore sophisticated neuropsychological models as well. From this the suggestion arises that some of the more basic psychoanalytic propositions such as the place of drive, affect and wish in motivational structure could conceivably derive strength from conceptualizations and tests made at the neurological level of investigation (see for instance Holt, 1967; Klein, 1967; Pribram, 1965). Should this prove to be feasible, the accusation some

biological scientists level at psychoanalysis – that a non-scientific closed-shop attitude pervades – would be met as far as the psychoanalytic metapsychology is concerned and on the biologist's home grounds at that: the connections to biology of a large segment of psychoanalytic theory – the metapsychological concepts – will be seen as less vague and therefore less monolithic, capable of clarification in many specific and particular instances – as e.g. in the proposed mechanisms of unpleasure, of affect and of attention – through observation and experiment. The *Project* appears to us as the key point of departure for accomplishing this.

We decided, therefore, to make a thorough exposition of the *Project* but not just as a 'book review'. First, we organized Freud's concepts according to advances in scientific thought that have occurred since 1895, advances such as information measurement, and control theory. Second, we adduced current behavioural and neurophysiological data to support or to contradict those concepts. We believe that this manner of presentation makes the *Project* currently useful and truly a 'Preface to Contemporary Cognitive Theory and Neuropsychology'.

By way of introduction, some of the currents of the scientific *Zeitgeist* within which Freud worked, by now clarified by a number of authors (see Amacher, 1965), need to be re-stated. Freud was a member of the physicalist group of Viennese neurologists who looked to Helmholtz and to Mach for guidance. Their aim was to describe, as far as possible, biological phenomena in the terms used in the physical, i.e. the natural, sciences. This aim received support from the fact that *neural* activity could be studied by electrically stimulating and recording from biological tissue and that the effects of such stimulations on chemical processes in the organism's body could be determined.

But Freud was not concerned only with biology – his patients had psychological difficulties. Work with Meynert, Brentano (Bernfeld, 1949; Merlan, 1945, 1949) and Charcot made it clear that behaviour is motivated – intentional – and that psychological processes such as thinking *could* be systematically investigated by the application of appropriate techniques – e.g. by hypnosis and by observations of the seemingly unrelated associations that occur during problem solving behaviour. Freud's tutelage in neuropsychiatry by Meynert, his tenure in Charcot's clinic and the influence this experience had on his career is well documented (Jones, 1957) but

The traces of Brentano's *Act Psychology* are less obvious and have never been explicitly discussed. Yet, the central position of instinctual drives in Freud's theory parallels Brentano's interpretation (which contrasts sharply with that

of Anglo-Saxon empiricists) of both stimulation and response in terms of acts of intending. In the early phases of Freud's *ego psychology*, Brentano's influence seems even more striking. The term intention crops up, the problem of reality testing leads to an analysis of the 'belief in reality' (Freud, 1916b, p. 146) along Brentano-like lines, and the distinctions between what is perceived and what is conceived, what is real and what is only thought, etc., come into play. This influence pervades the *Papers on Metapsychology* (1911b, 1912, 1914b, 1915a, 1915b, 1915c, 1916a, 1917a). And although Freud deliberately refused to have anything to do with philosophy, he did acquire some familiarity with it through Brentano. In one of the few specific references he makes to philosophy he characterizes psychoanalysis (and particularly its concept of unconscious determination) as the psychological counterpart of Kant's philosophical views (Freud, 1915c, p. 104). Indeed, the epistemological implications of psychoanalysis are closest to Kant (see Rapaport, 1947) and most remote from Anglo-Saxon empiricism.

(Rapaport, 1960, p. 13)

Freud's neurological experience made it clear that the *brain* was the prime instrument of the organization of psychological function. Behaviourism had not come to psychology: the distinctions between verbal reports of introspections and directly observable behaviour had yet to be clearly enunciated. None the less, Freud clearly distinguished between the conscious and unconscious determinants of behaviour: he maintained that conscious and unconscious processes could be distinguished in terms of different organizations within the central nervous system.

In making his model Freud thus became involved with an issue that continues to confront neurological and behavioural science as well as philosophy – the mind-body problem. Freud wanted above all to maintain his self-image as a scientist, a self-image derived in good part from Helmholtz's biological physicalism and Brentano's observational psychology. Rather than side-step the issue, he faced it directly in the *Project*. Only later did the neurological points become largely implicit in the metapsychological propositions.

Consciousness is the conception central to the mind-brain issue – an issue dealt with in considerable detail in the *Project*: conscious awareness results when the rules of attention operate. Freud's position on the relationship between consciousness, behaviour and brain is made clear. He wrote:

A word on the relation of this theory of consciousness to others. According to an advanced mechanistic theory, consciousness is a mere appendage to physiologico-psychical processes, and its omission would make no alteration

in the psychical passage [of events]. According to another theory, consciousness is the subjective side of all psychical events and is thus inseparable from the physiological mental processes. The theory developed here lies between these two. Here consciousness is the subjective side of one *part* [emphasis ours] of the physical processes in the nervous system, namely of the  $\omega$  [perceptual] processes; and the omission of consciousness does not leave psychical events unaltered but involves the omission of the contribution from  $\omega$ .

(S.E., p. 311)<sup>1</sup>

Again,

On this view the perceptual processes would *eo ipso* [from their very nature] involve consciousness and would only produce their further psych[ological] effects *after* becoming conscious.

(S.E., p. 389)

Consciousness is crucial in relating the physical and the mental universe of discourse. Freud felt that in the *Project* he could handle a great number of attributes of the psychological process through a physicalist, quantitative approach – the unit of quantity referring to an amount of neural excitation. Consciousness, however, did not easily lend itself to this quantitative approach:

. . . every psychological theory, apart from what it achieves from the point of view of natural science, must fulfil yet another major requirement. It should explain to us what we are aware of, in the most puzzling fashion, through our ‘consciousness’; and, since this consciousness knows nothing of what we have so far been assuming – quantities and neurones – it should explain this lack of knowledge to us as well.

(S.E., pp. 307–8)

As we shall see in Chapters 1 and 3, Freud solved this dilemma by suggesting that, when synaptic resistance has become minimal, nerve tissue is sensitive to periodicities, i.e. patterns of excitation, and that it is these which are the neural substrate of consciousness. He calls such patterns ‘quality’. The total process leading to awareness is yet more complicated. Only through the operation of two feedback loops initiated by the biological rules of attention (see Ch. 3) do patterns of excitation become sufficiently emphasized to allow this process to

<sup>1</sup>Unless otherwise noted, all quotations from Freud’s works are taken from Volume 1 of the *Standard Edition of the Complete Psychological Works of Sigmund Freud*, edited and translated by James Strachey, Hogarth Press, twenty-four volumes. All passages that appear in brackets are insertions by either Strachey or ourselves. When by ourselves the passages are italicized. When we have emphasized a passage of Freud’s by using italics, this is so stated in the passage.



come to fruition. The problem as a whole is faced in the *Project* in a highly specific and detailed fashion:

If we keep firmly to the fact that our consciousness furnishes only *qualities*, whereas [*physical*] science recognizes only *quantities*, a characterization of the  $\omega$  [*perceptual*] neurones emerges, as though by rule of three [*rule of hierarchy might be a better translation*]. For whereas [*physical*] science has set about the task of tracing all the *qualities* of our sensations back to *external quantities*, it is to be expected from the structure of the nervous system that it consists of contrivances for transforming external *quantity* into quality. . . .

(S.E., p. 309)

What is so novel about Freud's handling of the problem of consciousness? Certainly not the attribution of awareness to the functioning of a part of the central nervous apparatus. The *Zeitgeist* obtaining in Vienna during the 1890s is displayed in great detail in Exner's *Entwurf* (1894) – that other *Project* which provided such an 'important immediate stimulus' (Jones, 1957, p. 380) to Freud's own gigantic undertaking. Cortex is certainly repeatedly referred to by Exner as the organ of consciousness; diagrams of the operation of the process are everywhere (e.g. p. 193).

What then is unique in the *Project*? Freud's twist lies in his unveiling of the importance, the meaningfulness of *unconsciously determined behaviour* as an indicator of a scientifically accessible *process*, whereas others had merely concerned themselves with the obvious, i.e. the conscious. What is unique is the fact that he turned the whole argument around:

We at once become clear about a postulate which has been guiding us up to now. We have been treating psychical processes as something that could dispense with . . . awareness through consciousness, as something that exists independently of such awareness. We are prepared to find that some of our assumptions are not confirmed through consciousness. If we do not let ourselves be confused on that account, it follows, from the postulate of consciousness providing neither complete nor trustworthy knowledge of the neuronal processes, that these are in the first instance to be regarded to their whole extent as unconscious and are to be inferred like other natural things.

(S.E., p. 308)

This solution to the mind-brain-behaviour problem is not very different from the supervenionist (or interventionist) emergent property theory proposed recently by Sperry (1969). The current theory is based

on observations and experiments with patients who had their corpus callosum sectioned, producing not only a 'split brain' but two separable states. Eccles (1970) has interpreted these data to suggest that only the state regulated with the left, language producing, hemisphere should be termed 'conscious' and that the non-linguistic hemisphere is responsible for unconscious processes, while Sperry emphasizes, on the basis of non-linguistic behavioural indicators, the separate 'consciousness' of each.

Furthermore, a series of studies by Weiskrantz and Warrington (1974) has shown that patients with hemianopia due to restricted lesions of the occipital cortex can make remarkably good instrumental discriminative responses to objects displayed in the blind part of their visual field. Not only brightness but place and contour can be discriminated. Yet when these patients are asked what they see they reply 'nothing at all'. They say they are responding on some vague non-verbalizable 'feel' and that they are not 'conscious' of any visual excitation in their blind hemifield. These recent developments suggest we look seriously once again at the detailed proposals as to the neural mechanisms involved in consciousness put forward in the *Project* (see Chs. 2 and 3) – especially as the current speculations by Sperry and Eccles are so totally devoid of such proposals.

Enough has been said by way of introduction to indicate what it is we want to accomplish in this monograph. A formal presentation of our purpose reads: Freud's *Psychology for Neurologists*, his *Entwurf einer Psychologie*, the *Project*, is an important document. The hypotheses derived from this purpose can be phrased as follows: many terms used throughout that part of psychoanalytic theory which deals with mechanism are given operational definitions in the *Project*. As these usually involve neurological as well as behavioural referents, the document is, in a sense, a Rosetta stone for those interested in making communication between these realms of discourse possible. In addition, the *Project* contains early conceptions of processes which in many instances anticipate by years the later formulations made not only by Freud but by other psychologists and neuroscientists; in some cases these are more explicit and detailed explications of mechanism than can be found in any other of Freud's writings or that have been attained by others. Thus any psychological theory influenced by psychoanalytic concepts of mechanism, the metapsychology, would not have taken its present form without the formulations set forth in the *Project*. Cognitive theory can thus profit from study of the formulations set forth in the *Project*, and the crux of these formulations is that they are based on

## INTRODUCTION

neurological as well as on behavioural evidence. In fact, this neurological base of the mechanisms invoked in psychoanalytic theory proposed in 1895, which remain essentially unchanged though obscured throughout Freud's later writings, furnishes innumerable opportunities for tests of the validity of current conceptions such as 'drive reduction', 'ego strength' and 'wish fulfilment' and the attentional mechanism of 'reality testing'.

Finally, our purpose is to organize in a current theoretical frame concepts initiated in the *Project* and thus provide a *Preface to Contemporary Cognitive Theory and Neuropsychology*.

EPILOGUE:

THE *PROJECT* AND  
FREUD'S SUBSEQUENT  
WORK

*The 'Project' in History*: The impression seems to be widespread among analysts that Freud abandoned the *Project* and the kind of thinking on which it was based and that therefore any serious study of the *Project* can be of only historical interest and unrelated to contemporary psychoanalysis.

We hope to have dispelled this idea by the book itself, but perhaps this section dealing with the evidence that the ideas of the *Project* were never abandoned by Freud will help further to dispel it.

To make our point, we shall first have to propose several clarifications.

The *Project* includes a number of different types of propositions, and it is only with regard to some of them that the question we are discussing arises. There are at least these four types:

- 1) Psychological propositions like those about repression as a defence;
- 2) Psychological propositions for which neurological models are provided in the *Project* but not at any later period, like the mechanism by which 'lateral cathexes' change primary into secondary process functioning;
- 3) Psychological propositions for which neurological models are provided which persist, despite disavowal that a neurological substrate is intended, into Freud's later writings, like the idea that the primary process uses free energy while the secondary process uses bound energy;
- 4) Neurological and biological assumptions which allegedly are regulatory principles for mental life, like the constancy principle or the idea that the mental apparatus functions like a reflex arc.

Which of these kinds of propositions is Freud alleged to have abandoned? There is, of course, no argument about the psychological propositions. Furthermore, propositions about neurological assumptions like the constancy principle or biological assumptions like those that the driving force of the psychic apparatus is ultimately the somatic instincts remain staples of psychoanalytic thinking.

What has been abandoned is clearly part of the neurological model, like lateral cathexes. What is alleged to have been abandoned, but has not, are some of the neurological and biological assumptions which explicitly underlie that part of the *Project* which has become currently accepted metapsychology. The paradigmatic example would be that now the concept of psychic energy is said to have no reference to any physical substratum.

While it is true that the *Project* speaks much more explicitly about the energy concept than do later writings (the leading word in the *Project* is 'excitation'), our task is to show that energy and related concepts continue to have an implicit material (neural or chemical) substratum. It may be asked, what difference does it make. The answer is that the denial of the hidden neurological and biological assumptions conceals the fact that the metapsychology is reductionistic and prevents the disentangling of the psychological and natural science universes of discourse in psychoanalytical propositions. Furthermore, Freud's model has degenerated into a metaphor. That does not mean that it has been shorn of its neurological and biological assumptions. It does mean that the degenerated model is no longer formulated in testable terms, while the loose metaphor is taken as veridical.

## DISAVOWALS

Our procedure will be to cite a number of quotations from Freud to show that he continued to regard his metapsychology as both basic and veridical, that is, relating to the actual structure and function of the nervous system.

One of the factors that interferes with the easy demonstration of this point is that Freud frequently explicitly disavowed that his metapsychological concepts were meant to reflect the structure and function of the nervous system – though often, as will be brought out more clearly in the next sections, the disavowal was for the time being only. Some of the disavowals, stated in chronological order, are these:

1) I shall entirely disregard the fact that the mental apparatus with which we are here concerned is also known to us in the form of an anatomical preparation, and I shall carefully avoid the temptation to determine psychical locality in any anatomical fashion. I shall remain on psychological ground. . . .

(*The Interpretation of Dreams*, 1900, S.E., vol. 5, p. 536.)

2) It may safely be said that the psycho-analytic study of dreams has given us our first insight into a 'depth-psychology' whose existence had not hitherto been suspected.

And a footnote reads:

Psycho-analysis does not at present postulate any relation between this psychical topography and anatomical stratification or histological layers.'

(*The Claims of Psycho-Analysis to Scientific Interest*, 1913, S.E., vol. 13, p. 171.)

3) The quotation most often cited to demonstrate Freud's disavowal is this:  
... every attempt to ... discover a localization of mental processes, every endeavour to think of ideas as stored up in nerve-cells and of excitations as travelling along nerve-fibres, has miscarried completely.

(*The Unconscious*, 1915, S.E., vol. 14, p. 174)

4) This is the gap which psycho-analysis seeks to fill. It tries to give psychiatry its missing psychological foundation. It hopes to discover the common ground on the basis of which the convergence of physical and mental disorder will become intelligible. With this aim in view psycho-analysis must keep itself free from any hypothesis that is alien to it, whether of an anatomical, chemical or physiological kind, and must operate entirely with purely psychological auxiliary ideas; and for that very reason, I fear, it will seem strange to you to begin with.

(*Introductory Lectures on Psycho-Analysis*, 1915-16, S.E., vol. 15, p. 21)

5) In lecture 25 on anxiety in the *Introductory Lectures on Psycho-Analysis*, Freud writes:

... you will certainly expect psycho-analysis to approach this subject [anxiety] too in quite a different way from academic medicine. Interest there seems mainly to be centred on tracing the anatomical paths along which the state of anxiety is brought about. We are told that the medulla oblongata is stimulated, and the patient learns that he is suffering from a neurosis of the vagus nerve. The medulla oblongata is a very serious and lovely object. I remember quite clearly how much time and trouble I devoted to its study many years ago. To-day, however, I must remark that I know nothing that could be of less interest to me for the psychological understanding of anxiety than a knowledge of the path of the nerves along which its excitations pass.

(*Introductory Lectures on Psycho-Analysis*, 1916-17, S.E., vol. 16, p. 393)

6) In *An Autobiographical Study*:

The subdivision of the unconscious [*into unconscious and preconscious*] is part of an attempt to picture the apparatus of the mind as being built up by a number of *agencies* or *systems* whose relations to one another are expressed in special terms, without, however, implying any connection with the actual anatomy of the brain.

(1925, S.E., vol. 20, pp. 32-3)

7) In *The Question of Lay Analysis* the interlocutor says: "What do you mean by the "mental apparatus"? And what, may I ask, is it constructed of?"

Freud replied:

It will soon be clear what the mental apparatus is; but I must beg you not to ask what material it is constructed of. That is not a subject of psychological interest. Psychology can be as indifferent to it, as for instance, optics can be to the question whether the walls of the telescope are made of metal or cardboard. We shall leave entirely on one side the *material* line of approach but not so the *spatial* one.

(1926, S.E., vol. 20, p. 194)

## THE TIME IS NOT YET RIPE

But the quotations to follow make it clear that this disavowal was not one in *principle* but only for the *present*. Freud felt the requisite knowledge to provide the organic substratum for his metapsychological concepts was not yet available but would be at some time in the future. These ideas about a substratum are of two kinds, neurological and biological. Neurologically the stress falls on energy and its differing qualities. Of the two central ideas of the *Project*, quantity and neuron theory, Freud continues to hold to his ideas about quantity and its differing forms, but no longer uses the model of neuron theory. Again the quotations are chronologically arranged:

1) The faithfulness with which the seventh chapter of *The Interpretation of Dreams* follows the *Project* is immediately evident to anyone with even only a cursory acquaintance with the two statements. A typical example which shows how 'associative paths' has become the term which in the *Project* was the neuron network:

Let us add a frank account of how we picture the occurrence of a train of ideas. We believe that, starting from a purposive idea, a given amount of excitation, which we term 'cathectic energy', is displaced along the associative paths selected by that purposive idea.

(1900, S.E., vol. 5, p. 594)

2) The concepts of 'psychical energy' and 'discharge' and the treatment of psychical energy as a quantity have become habitual in my thoughts since I began to arrange the facts of psychopathology philosophically . . .

It is only when I speak of the 'cathexis of psychical paths' that I seem to depart from the analogies commonly used by Lipps. My experiences of displaceability of psychical energy along certain paths of association, and of the almost indestructible persistence of the traces of psychical processes, have in fact suggested to me an attempt at picturing the unknown in some such way. To avoid misunderstanding, I must add that I am making no attempt to proclaim that the cells and nerve fibres, or the systems of neurones which are taking their place today, are these psychical paths, even though it would have to be possible in some manner which cannot yet be indicated to represent such paths by organic elements in the nervous system.

(S.E., vol. 8, p. 147)

3) Freud's natural science assumptions in the *Project* were biological as well as neurological, so some of the quotations like the next one deal with these persisting biological assumptions in Freud's writings.

We have found it necessary to hold aloof from biological considerations during our psycho-analytic work and to refrain from using them for heuristic purposes, so that we may not be misled in our impartial judgement of the psycho-analytic facts before us. But after we have completed our psycho-analytic work we shall have to find a point of contact with biology; and we may rightly feel glad if that contact is already assured at one important point or another.

The contrast between the ego instincts and the sexual instinct [*recall that Freud's*



term is 'Triebe', 'drive', and therefore may be understood to have less of the connotation of innateness which the mistranslation 'instinct' carries], to which we have been obliged to trace back the origin of the neuroses, is carried into the sphere of biology in the contrast between the instincts which serve the preservation of the individual and those which serve the survival of the species. . . . It is only this conception which enables us rightly to understand the part played by the sexual instinctual forces in physiology and psychology.

In spite of all our efforts to prevent the biological terminology and considerations from dominating psycho-analytic work, we cannot avoid using them even in our descriptions of the phenomena that we study. . . .

I shall be satisfied if these few remarks have drawn attention to the many respects in which psycho-analysis acts as an intermediary between biology and psychology.

(*The Claims of Psycho-Analysis to Scientific Interest*, 1913, S.E., vol. 13, pp. 181-2)

4) . . . we must recollect that all our provisional ideas in psychology will presumably some day be based on an organic substructure. This makes it probable that it is special substances and chemical processes which perform the operations of sexuality and provide for the extension of individual life into that of the species. . . .

I try in general to keep psychology clear from everything that is different in nature from it, even biological lines of thought. For that very reason I should like at this point expressly to admit that the hypothesis of separate ego instincts and sexual instincts (that is to say, the libido theory) rests scarcely at all upon a psychological basis, but derives its principal support from biology. . . . Since we cannot wait for another science to present us with final conclusions on this theory of the instincts [*drives*], it is far more to the purpose that we should try to see what light may be thrown upon this basic problem of biology by a synthesis of the *psychological* phenomena.

(*On Narcissism*, 1914, S.E., vol. 14, pp. 78-9)

5) The study of the sources of instincts [*drives*] lies outside the scope of psychology. Although instincts are wholly determined by their origin in their somatic source, in mental life we know them only by their aims. An exact knowledge of the sources of an instinct is not invariably necessary for purposes of psychological investigation; sometimes its source may be inferred from its aim.

(*Instincts and their Vicissitudes*, 1915, S.E., vol. 14, p. 123)

6) Freud's distinction between ideas and affects is a neurological one, not one of psychological meaning:

The whole difference arises from the fact that ideas are cathexes - basically of memory-traces - while affects and emotions correspond to processes of discharge, the final manifestations of which are perceived as feelings. In the present state of our knowledge of affects and emotions we cannot express this difference more clearly.

(*The Unconscious*, 1915, S.E., vol. 14, p. 178)

7) The processes of the system *Pcs.* display - no matter whether they are already conscious or only capable of becoming conscious - an inhibition of the tendency of cathected ideas towards discharge. When a process passes from one idea to another, the first idea retains a part of its cathexis and only a small portion undergoes displacement. Displacements and condensations such as happen in the primary process

are excluded or very much restricted. This circumstance caused Breuer to assume the existence of two different states of cathected energy in mental life; one in which the energy is tonically 'bound' and the other in which it is freely mobile and presses towards discharge. In my opinion this distinction represents the deepest insight we have gained up to the present into the nature of nervous energy, and I do not see how we can avoid making it. A metapsychological presentation would most urgently call for further discussion at this point, though perhaps that would be too daring an undertaking as yet.

(ibid., p. 188.)

Note also the use of the word metapsychological here which comes very close to equating the employment of the term with neurology.

8) *Beyond the Pleasure Principle* repeats with great fidelity the major natural science assumptions of the *Project*. All that is missing is the neuron model. For the details of the similarity the reader should see Strachey's notes in the Standard Edition, vol. 18. Here is an example which goes so far as to suggest that psychoanalysis can provide an explanation for an anatomical matter which anatomy does not.

In discussing the system 'Pct.-Cs. [Perception-Consciousness]' in space Freud writes:

It must lie on the borderline between outside and inside; it must be turned towards the external world and must envelop the other psychical systems. It will be seen that there is nothing daringly new in these assumptions; we have merely adopted the views on localization held by cerebral anatomy, which locates the 'seat' of consciousness in the cerebral cortex – the outermost, enveloping layer of the central organ. Cerebral anatomy has no need to consider why, speaking anatomically, consciousness should be lodged on the surface of the brain instead of being safely housed somewhere in its inmost interior. Perhaps we shall be more successful in accounting for this situation in the case of our system *Pcpt.-Cs.* [Perception-Consciousness].

(*Beyond the Pleasure Principle*, 1920, S.E., vol. 18, p. 24)

9) The indefiniteness of all our discussions on what we describe as metapsychology is of course due to the fact that we know nothing of the nature of the excitatory process that takes place in the elements of the psychical systems, and that we do not feel justified in framing any hypothesis on the subject. We are consequently operating all the time with a large unknown factor, which we are obliged to carry over into every new formula. It may be reasonably supposed that this excitatory process can be carried out with energies that vary quantitatively; it may also seem probable that it has more than one quality (in the nature of amplitude, for instance). As a new factor we have taken into consideration Breuer's hypothesis that the charges of energy occur in two forms . . . ; so that we have to distinguish between two kinds of cathexis of the psychical systems or their elements – of freely flowing cathexis that presses towards discharge and a quiescent cathexis. We may perhaps suspect that the binding of the energy that streams into the mental apparatus consists in its change from a free flowing into a quiescent state.

(ibid., pp. 30-31)

In this monograph we emphasize the distinction between current in flow and local graded potentials as a major feature of the *Project*. Here we have the formulation of 1895 repeated in 1920.

10) The importance Freud gave to this idea whose origin he attributed to Breuer is also stated in an encyclopedia article written in 1920:

In a theoretical section of the *Studies* Breuer brought forward some speculative ideas about the processes of excitation of the mind. These ideas determined the direction of future lines of thought and even to-day have not received sufficient appreciation.

(*Two Encyclopaedia Articles*, 1923, S.E., vol. 18, p. 236)

11) The last quotation of this series is from the *New Introductory Lectures* of 1933:

... I must admit that I have tried to translate into the language of our normal thinking what must in fact be a process that is neither conscious or preconscious, taking place between quotas of energy in some unimaginable substratum.

What Freud was talking about was how

the ego anticipates the satisfaction of the questionable instinctual impulse and permits it to bring about the reproduction of the unpleasurable feelings at the beginning of the feared situation of danger. With this the automatism of the pleasure-unpleasure principle is brought into operation and now carries out the repression of the dangerous instinctual impulse.

(*New Introductory Lectures on Psycho-Analysis*, 1933, S.E., vol. 22, pp. 89-90)

## THE NEUROCHEMISTRY OF NEUROSES AND PSYCHOSES

Yet another line of thought which can be followed in Freud's writings to demonstrate his persisting neurological and biological assumptions are his statements of a possible future organic therapy for the neuroses. These too will be given in chronological order. It will be seen that he sometimes anticipates that such therapies will one day be available but on other occasions is doubtful. The issue of whether such a therapy would be possible *in principle* he does not tackle.

1) This first quotation compares the neuroses to organic intoxications:

We have been led on imperceptibly from the question of the causation of the psychoneuroses to the problem of their essential nature. If we are prepared to take into account what has been learnt from psycho-analysis, we can only say that the essence of these illnesses lies in disturbances of the sexual processes, the processes which determine in the organism the formation and utilization of sexual libido. It is scarcely possible to avoid picturing these processes as being in the last resort of a chemical nature; so that in what I termed the 'actual' neuroses we may recognize the *somatic* effects of disturbances of the sexual metabolism, and in the psychoneuroses the

*psychical* effects of those disturbances as well. The similarity of the neuroses to the phenomena of intoxication and abstinence after the use of certain alkaloids, as well as to Graves' disease and Addison's disease, is forced upon our notice clinically. And just as these last two illnesses should no longer be described as 'nervous diseases', so also the 'neuroses' proper, in spite of their name, may soon have to be excluded from that category as well.

(*Sexuality in the Neuroses*, 1906, S.E., vol. 7, pp. 278-9)

2) The same view is repeated in 1917:

In view of these analogies, we cannot, I think, avoid regarding neuroses as results of disturbances in the sexual metabolism, whether because more of these sexual toxins is produced than the subject can deal with, or whether because internal and even psychical conditions restrict the proper employment of these substances. . . . And for us this would be an occasion for recalling the erotogenic zones and our assertion that sexual excitation can be generated in the most various organs. . . . But for the rest a phrase 'sexual metabolism' or 'chemistry of sexuality' is a term without content: we know nothing about it and cannot even decide whether we are to assume two sexual substances, which would then be named 'male' and 'female', or whether we could be satisfied with *one* sexual toxin which we should have to recognize as a vehicle of all the stimulant effects of libido. The theoretical structure of psycho-analysis that we have created is in truth a superstructure, which will one day have to be set upon its organic foundation. But we are still ignorant of this. . . . The problems of the 'actual' neuroses, whose symptoms are probably generated by direct toxic damage, offer psycho-analysis no points of attack. It can do little towards throwing light on them and must leave the task to biologico-medical research.

(*Introductory Lectures on Psycho-Analysis*, 1916-17, S.E., vol. 16, pp. 388-9)

3) In so far as analytic therapy does not make it its first task to remove the symptoms, it is behaving like a causal therapy. In another respect, you may say, it is not. For we long ago traced the causal chain back through the repressions to the instinctual dispositions, their relative intensities in the constitution and the deviations in the course of their development. Supposing, now, that it was possible, by some chemical means, perhaps, to interfere in this mechanism, to increase or diminish the quantity of libido present at a given time or to strengthen one instinct at the cost of another - this then would be a causal therapy in the true sense of the word, for which our analysis would have carried out the indispensable preliminary work of reconnaissance. At present, as you know, there is no question of any such method of influencing libidinal processes; with our psychical therapy we attack at a different point in the combination - not exactly at what we know are the roots of the phenomena, but nevertheless far enough away from the symptoms, at a point which has been made accessible to us by some very remarkable circumstances.

(*ibid.*, vol. 16, p. 425)

4) It is to be feared that our need to find a single, tangible 'ultimate cause' of neurotic illness will remain unsatisfied. The ideal solution, which medical men no doubt have yearned for, would be to discover some bacillus which could be isolated and bred in pure culture and which, when injected into anyone, would invariably produce the same illness; or to put it rather less extravagantly, to demonstrate the existence of

certain chemical substances the administration of which would bring about or cure particular neuroses. But the probability of a solution of this kind seems slight.

(*Inhibitions, Symptoms and Anxiety*, 1926, S.E., vol. 20, pp. 152-3)

5) In view of the intimate connection between the things that we distinguish as physical and mental, we may look forward to the day when paths of knowledge and, let us hope, of influence will be opened up, leading from organic biology and chemistry to the field of neurotic phenomena. That day still seems a distant one, and for the present these illnesses are inaccessible to us from the direction of medicine.

(*The Question of Lay Analysis*, 1926, S.E., vol. 20, p. 231)

All too often one seems to see that it is only the treatment's lack of the necessary motive force that prevents one from bringing the change about. One particular dependent relation, one special instinctual component, is too powerful in comparison with the opposing forces that we are able to mobilize. This is quite generally true with the psychoses. We understand them well enough to know the point at which the levers should be applied, but they would not be able to move their weight. It is here, indeed, that hope for the future lies: the possibility that our knowledge of the operation of the hormones (you know what they are) may give us the means of successfully combating the quantitative factors of the illnesses; but we are far from that today.

(*ibid.*)

6) Biological factors subsequently deflect those libidinal forces [in the girl's case] from their original aims and conduct even active and in every sense masculine trends into feminine channels. Since we cannot dismiss the notion that sexual excitation is derived from the operation of certain chemical substances, it seems plausible at first to expect that biochemistry will one day disclose a substance to us whose presence produces the male sexual excitation and another substance which produces a female one. But this hope seems no less naïve than the other one – happily obsolete today – that it may be possible under the microscope to isolate the different exciting factors of hysteria, obsessional neurosis, melancholia, and so on.

(*Female Sexuality*, 1931, S.E., vol. 21, p. 240)

And two pages later:

... the only role left to the former [*original impulses*] is merely to indicate certain paths, while the [psychical] intensities which flow along those paths are supplied by later regressions and reaction-formations.

(*ibid.*, pp. 242-3)

Strachey adds a footnote with regard to the word 'intensity' that

Freud does not often use the word, as here, without any qualifying epithet: '*Psychische Intensität*' occurs very often in *The Interpretation of Dreams*. . . . It seems, on the whole, likely that Freud is in fact using the word as an equivalent to the term 'quantity' which he preferred in the earlier 'Project' of 1895. . . . He seemed actually to use the two terms as synonyms towards the beginning of Section (2) of his second paper on anxiety neurosis (1895), *Standard Ed.*, 3. The term 'quantity' is equated in the metapsychological paper on 'Repression' (1915) with 'instinctual energy'.

## IN CONCLUSION

It is our opinion, therefore, that Freud felt

- 1) that psychoanalysis had to become established as a purely psychological discipline using behavioural observations and the analysis of verbal reports as its techniques;
- 2) that ultimately this psychoanalytic science could be rejoined to its biochemical and neurological origins, but that a) the time was not right and b) this rejoining would *not* be a simplistic 'taking over' or 'reductive explanation' of psychoanalytic knowledge in biochemical or neurophysiological terms.
- 3) Furthermore, we feel that Freud often recognized that his metapsychological propositions were based on neurological and biological assumptions but sometimes failed to recognize this and even explicitly disavowed that it was so.

The two authors of this monograph agree that it would have been better for Freud to have published the *Project* and then set it aside rather than let it fester unseen to degenerate into untestable metaphor that repeatedly and unpredictably bursts to the surface in later theorizing.

However, we are still in some disagreement as to whether the time is now ripe for rapprochement between psychoanalysis, experimental psychology, neurophysiology and neurochemistry. More accurately, we disagree as to whether the time will *ever* be right or whether these disciplines – as different levels of inquiry and explanation, one in the universe of human meaning and the other in the universe of natural science – must inevitably go their separate ways.

Reductive explanation of psychoanalytic knowledge is not what either of us espouses. Pribram, however, feels there is a place in the scientific scheme for investigators and practitioners working at the interface between disciplines. Further, he feels that often, though not always, the most significant advances in understanding and in practice arise at such interfaces. Pribram proposes two examples: the meaning of a phrase of music is certainly largely independent of the characteristics of the medium in which that music is realized; a high-level programmer can function reasonably well without knowing whether his program is going to be realized with an IBM or a CDC computer. But *somebody* has to know – a conductor, a taping expert, an assembler of machine language, etc. – else the music and program remain unrealized. Gill feels, on the other hand, that a knowledge of the medium in which the music or program is realized tells us nothing about the music *as music* or the program *as program*.

Pribram feels it is important that this volume addresses and finds audience in these 'somebodies' working at the brain-behaviour-experience interfaces.

Specifically, he urges psychologists in the physiological and in the cognitive areas to review the *Project* for currently relevant, comprehensive and detailed theories of thinking and consciousness. Gill also feels that they ought to read it, and that psychoanalysts will profit by sympathetic study of Freud's *Project* because it is, in important respects, considerably more explicit than Chapter 7 of *The Interpretation of Dreams* – their current source for metapsychological understanding. Where we differ is that Gill feels that psychoanalysis must go its own way and that means purging it of its natural science metapsychology, while Pribram welcomes psychoanalysis back into the natural sciences. Pribram doubts that the differing views of the two authors are really, in the long run, incompatible, while Gill finds them irreconcilable.