

The Gold-Plated Leucotomy Standard and Deep Brain Stimulation

Grant Gillett

Received: 9 August 2010 / Accepted: 17 October 2010 / Published online: 22 January 2011
© Springer Science+Business Media B.V. 2011

Abstract Walter Freeman, the self styled neurosurgeon, became famous (or infamous) for psychosurgery. The operation of frontal leucotomy swept through the world (with Freeman himself performing something like 18,000 cases) but it has tainted the whole idea of psychosurgery down to the present era. Modes of psychosurgery such as Deep Brain Stimulation and other highly selective neurosurgical procedures for neurological and psychiatric conditions are in ever-increasing use in current practice. The new, more exciting techniques are based in a widely held philosophical position on the relationship between the mind, brain and soul, which is the key to ethical debates in this area. Psychosurgery has always posed questions of responsibility, personality, character, identity, spirit, relationship, integrity, and human flourishing and they do not go away when we enter the brave new world of neuroethics and Deep Brain Stimulation.

Keywords Neuroethics · Deep brain stimulation · Psychosurgery

The “gold-plated leucotomy standard” arises from a retrospective ethical evaluation of the work of Walter Freeman, the self-styled neurosurgeon who eventually

became famous (or infamous) not only for his gold-plated leucotomy knife but also for his barnstorming approach to psychosurgery (El Hai 2005). The operation of frontal leucotomy swept through the world (with Freeman himself performing something like 18,000 cases) and then became an anathema that has tainted the whole idea of psychosurgery down to the present era. We are now learning of the increasing use of Deep brain stimulation and other neurosurgical procedures for selected neurological and psychiatric conditions (Nuttin et al. 2002; Manshour et al. 2005). Given that the patient is a complex psychosomatic individual, we need to be alert to the ethical problems in this area of practice.

Psychosurgery—including the implantation of electrodes for long term use in deep brain stimulation—directly affects “the source of our pleasure, merriment, laughter and amusement, as of our grief, pain, anxiety and tears” (Hippocrates 1978, 248). There are several techniques targetting defects in neural function that are believed to cause psychological suffering, but older, more destructive lesions have recently been supplanted by the possibility of stimulation, which uses, rather than damages, functioning brain connections. Some of the techniques involved have demonstrable and relatively reproducible results (such as cingulotomy for pain), but some do not; and some are well studied while others are surrounded by controversy (Baer et al. 1995; Kim et al. 2002). All share the excitement of the new and, on that basis, appeal to both theorists and therapists. Their underlying ratio-

G. Gillett (✉)
Bioethics centre, University of Otago,
P. O. Box 913, Dunedin, New Zealand
e-mail: Grant.gillett@otago.ac.nz

nale is both interesting and radical, and is based in a widely held philosophical position in relation to the mind, the brain and the soul that, when applied to mental disorders, is the key to ethical debates in this area.

Aristotle on the Soul

For Aristotle (1986), the soul (or psyche) is the basis of characteristically human life and is part of a holistic conception of human beings in which both matter and form (or body and subjectivity) are important. A very inadequate analogy is with the form of a statue—say a statue of Diana—that exists as such in virtue of a particular configuration of a piece of bronze. The very same bronze, recast into a statue of Apollo, would become a different thing with its own distinctive nature, properties, and significance. The form of a living human being is, however, not just a configuration of matter but a holistic, subjective, relational and embodied reality: the person who exists in our midst as a being-in-the-world-with-others. (Gillett 2008) The soul, seen in this way, is not a ghost in the machine or anything of that kind, although it is what gives us life and creates the rich meanings that inform the moments of our lives.

Aristotle remarks: “If the eye were an animal, then sight would be its soul” (1986, 158). He notes that the human soul comprises “the nutritive, perceptive, and intellective faculties and movement”(160), as an integrated mode of being that fits a person for the world to which we are adapted. This characterisation, involving prominently our relatedness to others and the life skills at its basis, implies an identity that evolves over time (from the moment of our entry into the lives of others), a stream of conscious experience, and a moral standing as a socially situated agent whose life story is lived out and elaborated among those others. It is in the holistic and multifaceted nexus of relationships that mental disorders take shape and become part of the soul (or psyche).

Several formative influences shape the soul, in that our genetics and neurobiology have a significant part to play along with the developmental trajectory of the individual as s/he relates to others (Blair 2003). One learns how to think as one relates to care-givers in the context of intense inter-personal activity in which we

are loved, neglected, resented, abused or even hated by, and learn to love, trust, respect, fear, oppose or even do violence to others. The human soul, we might say, is an emergent mode of being that reflects the inter-relatedness of reason, emotion, and action in human life. Thus (after Wittgenstein, Bruner, Harre, Damasio, and others), a focus on narrowly cognitive functions (and therefore the Cartesian mind) in making us distinctively human overlooks the complexity of the psyche as it is shaped by our shared lives in a problem-solving collective where we are bound to each other in many different interpersonal, familial, cultural and political ways.

Our brains, as the Hippocratics noted, facilitate our adaptation to this natural and human environment but also to the world of stories, symbols and meanings that is formative in human development. The tools of the psyche, therefore, are formed by our interactions with the world and others and the habits of the heart that arise in a person’s history. It is here that a person learns to adapt to the human life world as s/he encounters it. Thus the relatively rich (or messy) term “soul” is better than the relatively “pure” and cognitive term “mind” in discussing the human psyche and appreciating the disorders that are the clinical concern of psychiatry and the healing arts.

The Aristotelian position on the soul, or psyche, can be summarised as follows:

- (i) The soul is shaped through living as a subjective being among others;
- (ii) The soul is the expression of patterns of activity laid down in the brain;
- (iii) The brain records significant regularities of excitation and information use that have been repeated and proved adaptive in a given human context;
- (iv) These patterns reflect both the regularities of nature, and social and cultural reality;
- (v) A study of human discourse replete with the relationship in which it occurs allows us to understand a human soul as a unique, interactional configuration of brain function shaped by a segment of the human life-world.

Some conclusions follow that are hugely relevant to the current discussion:

- (i) We are beings-in-relation-to-others, and who tell and live out stories;

- (ii) Our relational skills and tendencies mediate our interactions with the world and our ability to live sustainable lives; and
- (iii) We are beings who are constantly remoulding ourselves.

Over time a human being develops a range of life skills through training in a highly articulated relational milieu that produces souls and those skills enable a person to live a distinctive life story. That story is vulnerable to both individual and commonly encountered modes of breakdown or maladies of the soul (Kristeva 1995; Gillett 2009).

When we turn our minds to psychosurgery and neurosurgical procedures to modify the function of the psyche, our ethical thinking should address the needs, vulnerabilities and interests of holistic creatures like us, whose maladies of the soul are both stereotypical (in certain ways) and individual (especially when we consider their remediation).

The Theoretical, Medical, and Evidential Rationale for Psychosurgery

Psychosurgery uses neurosurgical techniques to try and alleviate psychiatric disorders on the basis that settled patterns of motor and psychological activity reflect underlying stereotyped and well practiced routines for living and may be resistant to change using other methods (Manshour et al. 2005). Its controversial history is nowhere so obvious as in the case of the gold-plated leucotomy.

Walter Freeman was a swashbuckling figure who strode through the worlds of neurology, psychiatry and neuroscience bringing with him a frontier mentality and a crusading zeal in the otherwise conservative 1950s (Pressman 1998).

Freeman was galvanised by the work of Egas Moniz, a brilliant Portuguese neuroscientist who had won renown through his work in cerebral angiography as a means of imaging the blood supply of the brain and revealing pathology through its effects on the cerebral blood vessels. Moniz was inspired by John Fulton's Yale experiments in chimpanzees to think that some psychiatric patients would benefit from an intervention to alter the patterns of brain activity that were theorised to lie at the heart of their psychological problems (Pressman 1998, 48). This

initiative resonated with the radical idea (in accordance with the new science of man) that psychology manifested brain function rather than anything non-physical, ethereal, or spiritual.

The frontal lobes were considered to be the organs of civilization, an attitude apparently confirmed when railway foreman Phineas P. Gage suffered extensive damage to both frontal lobes that "compromised his ability to plan for the future, to conduct himself according to the social rules he previously had learned, and to decide on the course of action that would be most advantageous to his survival" (Damasio 1994, 33); he was, in a word, "not the same Gage" (a severe blow for a railway foreman).

The story of Phineas Gage should have sounded warning bells for anybody contemplating radical frontal lobe surgery. Nevertheless, Egas Moniz and Almeida Lima (in Lisbon), began operating to divide frontal lobe connections in a series of psychiatric patients. Initial reports of success in patients previously regarded as hopeless and chronically ill led to their technique being taken up much more widely, particularly by medical entrepreneur Walter Freeman. Between 1936 and 1978, in the United States alone, some 35,000 patients had frontal leucotomy for psychiatric indications. Moniz was awarded a Nobel Prize (partly for his work on cerebral angiography) but, from the outset, frontal lobotomy and the concept of psychosurgery raised ethical concerns. In retrospect, these have proven well-founded, but at the time Freeman and anyone persuaded by him was driven to embark on a crusade: "to be the instrument that radically altered the desperation and suffering that he personally observed in his patients and their families" (Pressman 1998, 344).

Critiques of the leucotomy era record features of its widespread uptake that have a disturbingly familiar ring to those who are cynical enough to cast a sceptical eye on medical fashions in general (however much, in youth, we may have been swept along):

In Freeman's view, a treatment's value was best judged by blending the opinions of the patient and his or her family with the sensitive observations of the clinician. At professional meetings he would bring along testimonial letters from former patients and simple charts of the number of them employed or keeping house, forceful—if unscientific—testimony of lobotomy's real life benefits (Pressman 1998, 345–6).

This enthusiastic wave, the crest of which bears along a new and quasi-magical medical technique, all too often is further buoyed along by “scientific assessment and evaluation” that tended to hide a number of problems implicit in Janet Frame’s eloquent account of life in a 1950s mental institution (1961):

After her operation Louise became more docile, less inclined to fly into a rage if people refused to hear her “story”; she wet her pants and giggled delightedly, and yet began to take a pride in her appearance, but one is not sure how far that was the result of the operation or of the changed attitude towards her. She was given every attention and plied with curious morbid questions by the nurses who shuddered when they looked at her and at the others with their bald heads and said, amongst themselves, “I’m glad it’s not me. It gives you the creeps” ...

Louise improved. The doctor came to see her twice in one week! And then, as she stayed day after day in Lawn Lodge, and the novelty of the operation wore off, and the doctor had no more time to see her twice a week, although still docile, she grew more careless about her appearance, she did not mind wetting her pants, and the nurses, feeling cheated, as people do when change refuses to adopt the dramatic forms expected of it, at the sight of the “old” Louise still settled comfortably under the “new”, gave up trying to re-educate her, and very soon she was again just one of the hopping, screaming people in the dayroom (Frame 1961, 111).

Frame notices the multiple interactive influences bearing on a psychiatric intervention and its assessment in a way that one might expect from the complex neo-Aristotelian account of mental disorder. In many of the cases who were part of Freeman’s “adventures with an ice pick” (albeit gold-plated) it was impossible to say what a lobotomy achieved. The dynamic and changing relations between indications, procedure, and outcome measures reveal a “collective uncertainty that should not be eliminated from judgments of psychosurgical efficacy” (Kleinig 1985, 110).

A further problem with the pre-frontal leucotomy concerns the “old unacceptable personalities” (Frame 1961, 111) that lobotomy aims to alter. We ask,

“unacceptable to whom?” and, when we relinquish the idea that a personality is an intrinsic characteristic of a person attributable to this or that variation of brain function, we realise that what we call personality represents a complex adaptation to a context where the history of what has happened between people is an important part of what is going on. What is more, the popular image that lobotomy (and psychosurgery in general) makes people into “zombies” who exhibit “inertia, unresponsiveness, decreased attention span, blunted or inappropriate affect and disinhibition” (Mashour et al, 412) raises an ethical question as to whether we should ever allow such a thing to happen. These cognitive and psychic injuries, and the alteration of a person’s essential self by psychosurgery, have led to continuing attempts to refine or limit the procedure—but the ethical unease remains.

One of the theoretical underpinnings of psychosurgery is that the primitive or emotionally powerful centres of the brain, collectively labeled “the limbic system,” can exert an undue and malign influence on the frontal lobes—the organs of civilized and well-adjusted behaviour. It seems to follow that severing the connections conducting the malign influences and patterns of excitation would ameliorate the problems. During the lobotomy years, psychologists and neurologists were trying to understand the limbic system, its connections, and its role in behaviour and personality. There followed the development of more targeted procedures to minimise the side effects of the procedures while preserving their beneficial effects, in so far as these can be measured in refractory psychiatric conditions (Kim et al. 2002). The obvious attraction of Deep Brain Stimulation (DBS) is that it carries the two desirable trends to a new level in that stimulation disrupts existing patterns of stereotypical and maladaptive activity but can be switched on and off without creating significant longstanding damage. As such it does not seem to threaten the harms to patients that became evident in the wake of the leucotomy craze:

First sold as an operation to be used as a last resort, the lobotomy had become the first step to creating a manageable personality. Even problem children were being lobotomized. By the early Fifties, reservations about the effects of the lobotomy could be heard. Its use as a first, rather than a last, resort by amateur surgeons

who did not even bother to give the patient a preliminary psychiatric report was rife. Post-operative infections, and simple fatalities were common; autopsies showed that large areas of brains, not selected nerves, were utterly destroyed. Astonishingly, there had still been no reliable sustained studies of the effects on patients, only Freeman's eternally optimistic data ... It was, furthermore, impossible to judge recovery in many, they were so different. The inert, emotionless, inhuman quality of many lobotomized, who were everywhere to be seen, began to revolt the public, though thousands still submitted their relatives for the operation (Youngson and Schott 1996).

The overall ethical justification for psychosurgery is that we may lack any other effective therapy for serious psychiatric conditions and yet feel a therapeutic imperative to do something. In that situation, the insufficient evidence of efficacy for the procedures concerned are better than therapeutic nihilism in any case where the professionals and those properly consulted over that decision (patient, family, counselors, and so on), favour the attempt to treat, knowing that it involves invasive procedures on the brain. Exactly the same considerations seem to apply to Deep Brain Stimulation.

Deep Brain Stimulation (DBS)

DBS involves placing an electrode into a precisely defined locus in the brain that has been found (by serendipity or as a result of previous studies) to have an effect on a psychological condition. The conditions of interest at the moment are Obsessive Compulsive Disorder (OCD) and Treatment Resistant Depression (TRD) but psychosurgery (amygdalotomy, not DBS) has been done for Antisocial Personality Disorder (ASPD), and so that may well be a further target for intervention. In some cases the use of DBS followed the observation of improvement in psychiatric symptoms (such as depression) for patients having DBS for Parkinson's disease. In other cases the effects of ablative psychosurgery or fMRI imaging studies suggested a possible role for DBS in certain psychiatric disorders (Hardesty and Sackeim 2007). In yet other cases the use of DBS followed studies where

non-invasive transcranial magnetic stimulation had a demonstrable effect on a psychiatric condition that had been refractory to other modes of treatment (Ressler and Mayberg 2007). In each example the rationale is similar even though details (such as placement of the electrodes, suppression or enhancement as the desired effect, stimulation frequency and amplitude, and so on) vary a great deal. The underlying thought is captured by the following "psychosurgery syllogism":

The Psychosurgery Syllogism

1. All behaviour, thoughts, and moods result from brain activity.
2. Psychological problems reflect abnormal instances of such brain activity.
3. Psychological problems can be addressed by altering the underlying brain activity.
4. The most direct way to alter brain activity is neuro-intervention
5. The most direct way to affect a psychological problem is neuro-intervention.

However, when we examine pain therapy using neuro-intervention we might feel a slight hesitation about acceptance of the syllogism. In pain therapy it seems that the nociceptive (pain sensing) neural activity is there to serve the adaptational needs of the organism whereby pain signals a threat to the organism (Wall 1999). For that reason, if the threat is not removed then the pain will not definitively be treated and only selected pain problems conform to the syllogism. That is understandable when, as good neo-Aristotelians, we view the psyche as a holistic relational aspect of a human being and the nervous system as to some extent plastic in the face of overall organismic demands (for instance to integrate cyborg technology into perception).

Thus we need to alter Premise 3 as follows: "Psychological problems are addressed but not always effectively or in an enduring manner by altering underlying brain activity." That modification significantly changes the rhetoric of the argument so that "direct" in the conclusion (Premise 5) has to be supplemented as follows "The most direct, but not necessarily the most effective or advisable, way to alter an person's psychology is neuro-intervention."

We can link this modified conclusion to a more general thesis as follows:

Where something is highly significant in the overall psychic economy of any organism, neural plasticity will find a way to convey it into consciousness.

We can now contrast frontal leucotomy and neuro-interventions, which destroy the categorical basis for messages of organismic significance with DBS, which changes those messages and by that means alters a human being's relationship with the human life world. Where the alteration results in a more sustainable lived story then we would expect it to be maintained and to initiate a lasting improvement, whereas when the alteration merely masks a problem that is a continuing threat to psychological sustainability we would not (the maladaptation still exists and must be dealt with in a more satisfactory way).

Problems occur particularly when a relational problem can be ameliorated by making a person more docile or less feisty, as in the infamous lobotomy of Frances Farmer:

She had rebelled all her life against every form of authority, and despite her success in Hollywood and Broadway, found herself incarcerated in the Western State Hospital in Fort Stella-combe, Washington, aged only 34 ... no treatment yet devised seemed to work on her; she would not be tamed. But her communist sympathies and her aggression towards officialdom had offended too many people for them to give up without "curing" her ... Hither rode Walter Freeman, knight to the rescue, ice pick in one hand, hammer in the other. Patient number one was wheeled before him. He put the electrodes on her head and shocked her into a faint, lifted her eyelid, and plunged the ice pick into her head. He pulled it out ... Another ... And another. Afterwards, in a dark and silent ward, the patients lay supine on their beds or cried quietly ... The personality that was Frances Farmer had been effectively terminated earlier in the day ... she was reduced to a state of turgid, generalized, mediocrity by the surgery (Youngson and Schott 1996).

This shocking story is more eloquent than any argument about the shortcomings of the psychosurgery syllogism and stands as stark warning about its clinical progeny.

The Gold-Plated Leucotomy Standard

The gold plated leucotomy standard is an ethical construct abstracted from Freeman's justification for his leucotomy "crusade." Neurologically speaking, what he was doing made a certain kind of (under-theorised and researched) sense and its apparent success, both as seen by patients or their relatives and in terms of his own clinical judgement, seemed to provide ample anecdotal evidence that justified overriding any scruples advanced by more circumspect or conservative medical opinion. The voices that railed against the widespread use of leucotomies seemed, collectively, to be stuck in the conservative mud. It looks different in retrospect.

There is no doubt that innovation in medicine often does not initially command ready acceptance and that a cautious approach to invasive procedures seems to be a counsel of wisdom. The safeguards surrounding contemporary forms of psychosurgery seem to be robust but one suspects that, like thousands of Americans who were prepared to submit their relatives to lobotomy, a private arrangement with the operator is highly subject to conflicts of interest and self-deception, and can form a malignant mix in the face of Frame's "old unacceptable personalities".

The most ethically acceptable basis seems to be states in which there is a complete lack of any (even unacceptable is better than nothing) personality because the patient is reduced to a state where no genuine interactions with the world are happening (Yamamoto et al. 2005). Here we might think that any gain is worthwhile, in that DBS seems to return people from a shadowy and inaccessible state to some sort of communion with the world that otherwise seemed possible. But, as is the way with ethical dilemmas, "It's not that simple!" Consider, for instance, two problems: the Risk of Unacceptable Badness (the RUB), and the neglect of the patient's real needs.

The first problem—the RUB—has been discussed mainly in relation to head injuries and rescue medicine, where it is intuitively clear that the best efforts to revive someone might misfire in the sense that the person's life is saved but s/he is left in a state that, if given the choice, s/he would regard as unacceptably bad or worse than death (Gillett 2004; Honeybul et al. 2009). Glannon (2009) has discussed the problem of lifting a person out of a state of virtual oblivion into one of tortured existence such that the

possibility of the result being unacceptably bad to anybody (including the patient) is real and deserves ethical consideration. All interventions require a reasonable presumption of consent on the part of the patient (most easily achieved by asking them) and that condition does not lapse when the patient is incapacitated or incompetent. Instead we use the idea of substantial benefit (an outcome that now or in the future the patient would regard as worthwhile) or objective best interests (the kind of interests that a reasonable person could plausibly or probably be deemed to have) to guide our decisions (Campbell et al. 2005). The problems of leucotomy make this assessment difficult as there is a profound change in the person concerned, but in general we can rely on widely shared intuitions in the light of the facts of a case to make such judgments. In fact, difficult as they are, courts often have to make such judgments for impaired and vulnerable human beings. Intuitively it is evident that a person stimulated into some kind of awareness of and responsiveness to things around them is not necessarily better off than a person who is vacant or has, metaphorically, “left the building.”

The second problem—neglect of the patient’s real needs—arises because cases of MCS (Minimally Conscious State) and PVS (Persistent Vegetative State) are subject, despite advances in neuro-imaging, to significant diagnostic uncertainty (Giacino et al. 2002). It is therefore possible that a person could be given a trial of DBS when, in fact, the relevant lesion is in the midbrain and the patient is in Locked In Syndrome (Chisholm and Gillett 2005). We do have means of effective rehabilitation therapy for Locked In Syndrome but it requires a careful assessment of the person’s residual capacities, not a brain intervention designed as a quick fix. What is more, in MCS or PVS, the brain area where DBS is most likely to yield results is the area where the damage has occurred and there may be tenuous residual function playing an important part in the spared capacities that the patient is using to engage with rehabilitative therapy. The neglect of the patient’s real needs may substitute a quick fix based on marketable and technologically conceived and executed techniques (with real and to some extent incalculable risks), for a careful assessment and targeted intervention based on a holistic appraisal of the patient’s lived experience. When confronted by patents like Nick Chisholm, who has suffered the catastrophe of becoming Locked In, we often fail to recognise the

need that is confronting us and how much it reveals the way that personality and identity are relational and engaged with the world (Gillett and Chisholm 2007). The idea of an autonomous and self-contained individual with something awry in his or her internal machinery was a central construct in the gold-plated leucotomy adventures and their ethical justification; we should not repeat the mistake. But other ethical problems are washed up in the wake of initial enthusiastic reports about DBS.

Analysing the Ethical Problems of DBS

False Hopes

All new technologies raise patients’ hopes and promise an answer for a question that their suffering prompts them to ask with more and more desperation as time goes by. At a time of therapeutic pessimism in psychiatry the leucotomy held unbounded and unmeasurable promise based on poorly documented evidence but plausible (and scientifically driven) speculations about the nature of human beings, the workings of the brain, and the metaphysics of mental disorders.

Neurotechnologies are of utmost fascination to us because of their focus on the seat of the soul—the neural or physical substrate that, on the one hand, is a proper object of study and intervention for biomedical science, and, on the other, seems to capture the essence of what it is to be truly human. We often think of the brain as a site of mysterious goings on which somehow equate with the psychological attributes that make each of us unique. The psychosurgery syllogism is therefore very appealing. But we neglect to notice that Aristotle’s dictum “sight is to the eye as the soul is to the body” implies by analogy that it would be as wrong to think that we can understand the soul by intensely studying the brain as it would be to think we can understand sight (as an adaptive capacity of many higher organisms) by intensely studying the eye. The soul is holistic, it relates us to the human life-world—a world of meaning and embodiment—not just a world of cognitive function. We are beings-in-the-world-with-others, and breakdowns in psychological adaptation can be mediated by any of the holistically related terms in that complex relation (Gillett 2009). Our metaphysics of

mental disorders is often implicitly grounded in the thought that in reality the psyche/soul is intraorganismic whereas in fact it is relational and dynamically shifting in ways that depend on the nuances of the relationships in which it is formed and then functions. Therefore the soul outstrips biology in an interesting way that is evident in a simple example. There is a shift in activation in my limbic system when I notice that the happy couple who I was charmed by as they walked by in the park is made up of my fiancée and somebody else—but explaining this shift outstrips the resources of neuroscience. Metaphysics allows us to understand and explain the workings of things or the ways that they connect and engender one another (Foucault 1984, 56) and, for that reason, the metaphysics of the human psyche is much more layered (and therefore problematic) than that of the brain and its neurobiological workings.

How DBS Works

DBS is a way of interfering with patterns of excitation in the nervous system and, given that such patterns are the basis of many forms of behaviour and experience, it can be expected to affect them, sometimes profoundly. Where those patterns of activity and their inflexibility, perhaps caused by pathological anxiety and adverse experiences, are the basis of the problem and the problem is such that rational revision and re-storying cannot change it (as in OCD and PTSD), perhaps something like DBS may have an important part to play in a therapeutic regimen. Where the problem is likely to be more holistic, less amenable to tidy functional characterisation, and more entwined with widespread facts about the current adaptive strategies of the human organism involved (as in TRD and ASPD) the DBS may have a contribution but should never be regarded as touching the core of the problem. It is in such cases that *the neglect of the patient's real needs* runs the risk of combining in a very damaging way with an ongoing state of *unacceptable badness* to constitute a truly callous response to a cry of existential pain.

The Problem of Efficacy

The disorders of the psyche, par excellence, show us the difference between the phenomenon and what the

Greeks called the *hypokeimenon* (that which reveals itself or lies beneath the appearances). Locke referred to “the real essence”—the principled basis for the manifest nature of anything as ultimately revealed by an understanding of the relevant areas of knowledge; in social sciences the real essence of anything is complex and multi-layered. The standard middle-sized-dry-goods type of metaphysics follows the tried and trusted method of natural science: dissect and analyse so as to get as close as possible to physics and what it shows to be the basis of the manifest properties of things. But in psychology and psychiatry, as in other life sciences and social sciences, the *hypokeimenon*, or real essence, is extended beyond the organism and its internal workings. Causal or physiological mechanisms do not provide full or even adequate explanations, and getting a bigger picture (ethological, ecological, or socio-political) may be necessary to reveal what is going on in terms that allow the phenomenon of interest to be understood and adequately addressed. The more problematic metaphysics as the only basis for effective intervention (as seems dramatically to be the case in ASPD) may await at the end of a path of neuroethical or philosophical analysis and ought to inform our clinical acumen.

The Problem of Safety

Safety in clinical life is problematic for two reasons:

- (i) the damages may not be easily discerned; and
- (ii) adequate case experience may reveal problems that the first flush of enthusiasm missed.

The former is evident, *a fortiori*, in the case of leucotomy. To be rehabilitated—to be able to be a docile suburban woman or to serve in a flower shop—may have been a prevailing social desideratum but it was clearly compatible with states of the soul that most if us would find but a pathetic shadow of fulfilled human existence. Frances Farmer was tamed by her leucotomy but hardly (as we now reflect on it) benefited. Similar reservations might apply to psychosurgery (even of the kind which can be switched on and off) that makes us more contented and well-functioning members of a society infected with a restless drive towards ever more consumption (and those unalloyed twin goods: profit and economic growth)

The Idea of Enhancement and the Transformation of the Human

Some may regard the prescription for the good life as universal contentment, whereas others may feel it is better to mirror Socrates discontent. The theory of individual health questions many classical utilitarian assertions (Danzer et al. 2002) and we can also cast doubt on whatever people freely and competently choose for themselves. If human desire is a surreal montage (Lacan 1979) then it is understandable that our desires can take bizarre forms as in body disfigurement and self-mutilation or even death by determined and fiercely defended self control, as in anorexia. These phenomena cast doubt even on the seeming truisms informing utilitarianism and burden us with the task of re-examining the human soul and asking what in it is conducive to the good and the true.

The issue of “old unacceptable personalities” also arises in patients with neurological and psychological disorders causing profound changes in character, temperament, and cognitive ability that may be deeply disturbing for those who care for them. Nevertheless, even if psychosurgery offers relief from a debilitating psychiatric condition, the deeper worry is that we are not curing a disorder but rather transforming a person into someone who is more acceptable to the rest of us (Pressman 1998, 10). An in-depth assessment of the last resort that became a medical fashion—frontal leucotomy in 1950s psychiatry—provides a sobering conclusion in the area of psychosurgery:

What psychiatrists responded to was not an illness defined in unambiguous and rigid somatic terms, but *problems*—problems of the patient, the family, the hospital and society—as well as the underlying biological organism, all melded together into one disaggregatable plexus of which no two human beings had the same exact combination (Pressman 1998, 309).

Burn, heat, poke, freeze, shock, cut, stimulate or otherwise shake (but not stir) the brain and you will affect the psyche. You may affect it in ways that call to mind language dealing with the soul, and thereby pose questions of identity, responsibility, personality, character, spirit, relationship, integrity, and human flourishing. Such questions dominate the ethical issues surrounding destructive psychosurgery but continue to haunt us as we update the technology

and explore the brave new world of neuroethics and Deep Brain Stimulation. It is true that far more circumscribed and directed interventions, such as stereotactic and image-guided DBS, constitute a modern face of psychosurgery that is carefully monitored and surrounded by patient safeguards. But it is important to note that we are still embroiled in the intense debates between biological and social-humanistic schools in psychiatry that polarised the profession and its research and treatment paradigms in the 50s and 60s. It may be that when a person has fallen over this or that cliff that lies in the path of travellers through the human life world, that DBS and psychosurgery will have a part to play in the therapeutic endeavour. But ultimately it is only through wise judgment and careful reflection on the true and the good and the intricacies of being human in the world with others that we can determine whether that is so.

References

- Aristotle. 1986. *De Anima*. Trans. H. Lawson Tancred. London: Penguin.
- Baer, S.L., et al. 1995. Cingulotomy for intractable obsessive-compulsive disorder: prospective long-term follow up of 18 patients. *Archives of General Psychiatry* 52: 384–392.
- Blair, R.J.R. 2003. Neurobiological basis of psychopathy. *The British Journal of Psychiatry* 182: 5–7.
- Campbell, A.V., G. Gillett, and D.G. Jones. 2005. *Medical ethics*, 4th ed. Melbourne: Oxford University Press.
- Chisholm, N., and G. Gillett. 2005. Nick’s story: living with locked in syndrome. *British Medical Journal* 331: 94–97.
- Damasio, A. 1994. *Descartes Error: motion, reason, and the human brain*. New York: Putnam.
- Danzer, G., M. Rose, M. Walter, and B. Klapp. 2002. On the theory of individual health. *Journal of Medical Ethics* 28: 17–19.
- El Hai, J. 2005. *The lobotomist*. Hoboken: Wiley.
- Foucault, M. 1984. In *The Foucault reader*, ed. P. Rabinow. London: Penguin.
- Frame, J. 1961. *Faces in the water*. London: The Women’s Press.
- Giacino, J.T., et al. 2002. The minimally conscious state: definition and diagnostic criteria. *Neurology* 58: 349–353.
- Gillett, G.R. 2004. *Bioethics and the clinic: Hippocratic reflections*. Baltimore: Johns Hopkins University Press.
- Gillett, G.R. 2008. *Subjectivity and being somebody: human identity and neuroethics*. Exeter: Imprint Academic.
- Gillett, G.R. 2009. *The mind and its discontents*, 2nd ed. Oxford: Oxford University Press.

- Gillett, G. R., and N. Chisholm. 2007. Locked in syndrome, PVS and ethics at the end of life. *Journal of Ethics in Mental Health* 2(2)
- Glannon, W. 2009. Stimulating brains, altering minds. *Medical Ethics* 35: 289–292.
- Hardesty, D.E., and H.A. Sackeim. 2007. Deep brain stimulation in movement and psychiatric disorders. *Biological Psychiatry* 61: 831–835.
- Hippocrates. 1978. In *Hippocratic writings*, ed. C.E.M. Lloyd. London: Penguin.
- Honeybul, S., et al. 2009. The retrospective application of a prediction model to patients who have had a decompressive craniectomy for trauma. *Journal of Neurotrauma* 26 (12): 2179–2183.
- Kim, M.-C., T.-K. Lee, and C.-R. Choi. 2002. Review of long-term results of stereotactic psychosurgery. *Neurologia Medico-Chirurgica* 42: 365–371.
- Kleinig, J. 1985. *Ethical issues in psychosurgery*. London: Allen and Unwin.
- Kristeva, J. 1995. *New maladies of the soul*. New York: Columbia University Press.
- Lacan, J. 1979. *The four fundamental concepts of psychoanalysis*. Trans A. Sheridan. London: Penguin.
- Manshour, G.A., E.E. Walker, and R.L. Martuza. 2005. Psychosurgery: past, present, and future. *Brain research reviews* 48: 409–419.
- Nuttin, B., et al. 2002. Deep brain stimulation for psychiatric disorders. *Neurosurgery* 51(2): 519.
- Pressman, J. 1998. *The last resort: Psychosurgery and the limits of medicine*. Cambridge: Cambridge University Press.
- Ressler, K.J., and H. Mayberg. 2007. Targeting abnormal neural circuits in mood and anxiety disorders: from the laboratory to the clinic. *Nature Neuroscience* 10: 1116–1124.
- Wall, P. 1999. *Pain*. London: Orion.
- Yamamoto, T., et al. 2005. DBS therapy for the vegetative state and minimally conscious state. *Acta Neurochirurgica Supplementum* 93: 101–104.
- Youngson, R., and I. Schott. 1996. Adventures with an ice pick. *The Independent*, Sunday March 3, Arts and Entertainment.