

Psychiatry's problem with reductionism

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Abstract Psychiatrists often contrast the biopsychosocial approach to mental illness with reductionism. However, what reduction in psychiatry might involve, what it entails for the biopsychosocial approach, and what its clinical implications might be, are questions that have not been satisfactorily addressed to date. On the contrary, psychiatrists' discussions of reductionism have often obscured these issues. The aims of this paper are to consider some such discussions of reductionism, to disentangle and clarify some of the issues discussed, and to indicate how psychiatrists—particularly advocates of the biopsychosocial approach—might apply thought about reductionism usefully and productively.

Keywords Biopsychosocial model, Engel, Methodology, Conceptual framework, Dualism, Clinical neuroscience.

Psychiatry uncomfortably spans biological, psychological, and social perspectives on mental illness. As a branch of medicine, psychiatry is under pressure to conform to a biomedical model, according to which diseases are characterised primarily in biological terms (e.g. genetic influence, molecular changes in the body's organs, abnormalities detectable via blood tests, MRI scans, etc). But psychiatry also draws on the psychotherapeutic tradition, which explains mental distress in terms of life experience and social influences.

These approaches ought to complement each other, but historically this has not happened. With no theory creating global, systematic links between the two approaches, psychiatry is divided between clinicians who take a psychotherapeutic approach, those who take a biomedical approach, and those who subscribe to the uneasy eclecticism of the *biopsychosocial* approach (BPS). The latter generally involves little more than an acknowledgement that biological, psychological, and social factors are all relevant to understanding mental illness. It has been criticised for failing to specify how mental illnesses may be diagnosed and characterised in BPS terms and for failing to provide directions for treatment (McLaren 2006; Ghaemi 2009).

I will argue that BPS's failure to provide robust guidance for understanding and treating mental illness is partly due to a lack of clear thinking about the relationship between biological, psychological, and social aspects of mental illness. I will then describe how understanding different sorts of reductionism in psychiatry might help advance a BPS understanding of the mind.

I begin, in section 1, by sketching BPS and the relevance to it of reductionism. Section 2 outlines some key distinctions between types of reductionism. In section 3 I survey psychiatrists' views on reductionism and argue that these views are confused in various ways, and that they impede understanding of mental illness as a result. Section 4 summarises some ways in which discussion of reduction in psychiatry has resulted in attention being diverted

from the most important issues. I then suggest some directions for further thought on this topic in order to help improve BPS as a useful model for research and treatment in psychiatry.

The biopsychosocial approach

The term ‘biopsychosocial’ was coined by Roy Grinker in a 1954 lecture (published forty years later: Grinker 1994) but popularised by George Engel, building on the work of Adolf Meyer. Engel (1977) drew upon general systems theory—according to which the various ‘levels’ of conceptualising illness (biological, psychological, social) form a hierarchy with some laws and principles applying only within a level and others applying to the system as a whole—to envisage a holistic way of understanding and studying the mind. More recently, evidence for interactions between these levels has begun to emerge. For example, progress has been made in understanding how the brain changes when we learn (Kandel 2001); how psychotherapy changes the brain (Gabbard 2000); the link between genotype, childhood maltreatment, and adult antisocial behavior (Caspi et al. 2002); and the role of oxytocin in post-natal depression and children’s mental health (Apter-Levy et al. 2013).

However, a BPS model that can guide research and clinical practice requires more than evidence of causal links between biological, psychological, and social aspects of mental disorder. We need an idea of how these levels relate to each other more generally. Otherwise, to quote Nassir Ghaemi,

This eclectic freedom borders on anarchy: one can emphasise the ‘bio’ if one wishes, or the ‘psycho’ ... or the ‘social’. But there is no rationale why one heads in one direction or the other: by going to a restaurant and getting a list of ingredients, rather than a recipe, one can put it all together however one likes. This results in the ultimate paradox: free to do

whatever one chooses, one enacts one's own dogmas (conscious or unconscious). (Ghaemi 2009: 3)

A familiar way of conceptualising the relationship between the biological, the psychological, and the social involves reductionism. Indeed, psychiatrists writing about BPS often contrast it with reductionism. For discussion of reductionism to be useful, we need to know what reduction in psychiatry involves and what its clinical implications are. However, psychiatrists' discussions of reductionism often obscure rather than elucidate these issues. To begin to clarify this issue, let us consider how reductionism in psychiatry might be understood.

What is reduction in psychiatry?

Philosophers of science have distinguished several types of reductionism. Ontological, methodological, and epistemic reductionism are perhaps the most frequently mentioned (Ruse 1989, Sarkar 1992, Bennett and Hacker 2003, Brigandt and Love 2012).

Ontological reductionism is the view that there is only one type of stuff—physical stuff—that figures in biological, psychological, and social accounts of mental illness. It entails that, if there were nothing physical in the world, there would *ipso facto* be nothing psychological or social either. Ontological reductionism in psychiatry is a denial of Cartesian mind-brain dualism, and is uncontroversial. Indeed, its denial—which amounts to the claim that there exists a non-physical mental substance—is highly controversial.

Methodological reductionism is the view that mental illness is most fruitfully studied by focusing on biological phenomena rather than on psychological or social phenomena. A methodological reductionist would advocate studying (say) depression by focusing on the brain and ignoring psychological and social phenomena like the patient's feelings and

experiences. The conviction that methodological reductionism about mental illness is untenable is a chief motivation for BPS. Many important insights about mental illness would have been overlooked had researchers focused only on biology. For example, Leff and colleagues show that the social environment of people with schizophrenia has a direct effect on relapse (Leff et al. 1982), Kendler et al. (2003) show that an individual's risk of suffering from depression is strongly linked to certain experiences, and Caspi et al. (2002) show that a certain genotype combined with childhood maltreatment predisposes males to antisocial behavior in adulthood.

Whilst methodological reductionism in science is generally concerned with *research* methodology, psychiatry also involves a *treatment* methodology. We might, then, distinguish two sub-types of methodological reductionism. *Research-methodological reductionism* was described in the previous paragraph. *Treatment-methodological reductionism* is the view that mental illness is always best treated using a biological approach; that is, using methods like psychopharmacology, surgery, and electroconvulsive therapy (ECT) rather than methods like psychotherapy and lifestyle changes. As such, treatment-methodological reductionism is an extreme, crude approach. It should be distinguished from the more plausible claim that some particular disorder is most effectively treated using biological methods; for example, the view that severe, life-threatening depression is best treated with ECT.

In what follows, I will refer separately to research- and treatment-methodological reductionism. I will use the general term 'methodological reductionism' to refer to both types together.

Epistemic reductionism is the view that facts expressed in psychosocial terminology can be replaced by facts expressed in biological terminology. An example of an epistemically reductionist claim in psychiatry is the claim that psychosis is just the occurrence of certain sorts of brain events, where 'just' implies that once you know all the relevant facts about

brain activity, you know all there is to know about psychosis. Epistemic reductionism about the mind is unpopular but not unheard of. Paul and Patricia Churchland's eliminative materialism is a form of epistemic reductionism (Churchland 1981, Churchland 1986).

There are at least two sub-types of epistemic reductionism. *Theory reductionism* involves the claim that one theory (say, psychology) is epistemically reducible to another (biology) (Nagel 1949, 1961; Brigandt and Love 2012). *Explanatory reductionism* is a weaker form of epistemic reductionism. It need not be a relation between theories. Instead, the relata may be sets of facts or generalisations, or parts of theories (Brigandt and Love 2012; Waters 1990, 2008). I will distinguish between theory and explanatory reductionism only where the views we consider are sufficiently fine-grained to support this distinction. Where it is unclear which sub-type is meant, or where distinguishing between them is unnecessary, I write simply of epistemic reductionism.

As a final remark about methodological and epistemic reductionism, the question of whether someone is suffering from a mental disorder cannot, at least in our current medical framework and on our current understanding of what it is to have a mental disorder, be settled without reference to the patient's experiences and behavior; that is, to psychosocial phenomena. Such psychosocial phenomena are a central—if not the most important—aspect of clinical data used in psychiatric diagnosis. It is difficult to see how reliance on such data might be eliminated without radically reconceptualising current views about mental illness. (This observation led Thomas Szasz to conclude that mental illness is a myth (Szasz 1960.) A purely biological account of (say) schizophrenia stands or falls depending on how it is reflected by clinical data; that is, *inter alia*, by the patient's account of his or her experiences and/or by his or her behavior. To see this, imagine a biological account of schizophrenia that allowed the in-principle possibility of categorising as schizophrenic people who experienced none of the usual psychological or behavioral symptoms, or of excluding from its

categorisation people who experienced those symptoms. We might reasonably deny that such an account employs the term ‘schizophrenia’ to refer to the same phenomenon to which today’s psychiatrists refer using that term.

There are, then, at least three forms that reductionism in psychiatry could take. Ontological reductionism is widely accepted, whilst methodological and epistemic reductionisms are controversial. Whilst reference to reductionism is common in psychiatry, adequate delineation and evaluation of different kinds of reductionism are rare. In the next section, I review some discussions of reductionism in psychiatry.

Psychiatrists’ views about reduction

Some academic psychiatrists conflate or confuse different sorts of reductionism, obscuring the issues at stake as a result. Others draw approximately the right sort of distinctions, but stop short of drawing out the theoretical and clinical implications of their views. Let us consider some of these contemporary accounts.

In 2009, *The Canadian Journal of Psychiatry* published an editorial and two review papers on reductionism. The editorial was by Paul Grof and the reviews by Ian Gold and Joel Paris. Grof appears to endorse ontological but not research-methodological or epistemic reductionism, although he does not explicitly distinguish the separate types:

Most of my research has unfolded on a reductionist platform, and I share the widespread hope that the sciences of the brain will markedly improve the theory and treatment of mental illness. ... Nevertheless, complex mental phenomena cannot be reduced to minute molecular states. Most psychiatric illnesses are complex phenomena, and no single approach can sufficiently explain them or the experiences of people who suffer from them. (2009: 504)

He also indirectly expresses a rejection of treatment-methodological reductionism, anticipating with approval that an ‘integrated, interactional, pluralistic approach to psychiatric disorders may be coming to life’, in which ‘[i]nvestigating [biopsychosocial] interactions—being fully invested on the bedside and the bench simultaneously— ... may become crucial’ (2009: 504).

Gold takes reductionism in psychiatry to be ontological, epistemic, and perhaps also research-methodological:

In a well-known editorial, Insel and Quirion say that ‘mental disorders [should] be understood and treated as brain disorders.’ On this conception, reductionism entails that a successful theory of mental disorder will be solely, or largely, a biological theory.

Reductionism has to be thought of in this radical way otherwise it has almost no content. If reductionism were merely the view that neuroscience will contribute something to understanding the mind, then there could hardly be a need for editorials to make that point. Who would need persuading? (2009: 506, citing Insel & Quirion 2005: 2221)

The quoted claim by Insel and Quirion, whose views we will consider presently, appears to advocate every type of reductionism introduced in the previous section: ontological, epistemic (theory), and methodological (both research and treatment). Gold focuses on epistemic reductionism in the second sentence of the passage quoted above, and indicates that he takes Insel and Quirion to endorse theory reduction, or at least a wide-ranging explanatory reduction. He insists that, unless reductionism takes this form, ‘it has almost no content’, which he takes to follow from his observation that nobody would need to

be persuaded of a milder form of reductionism. He confuses content with controversy, however. Reductionism can be both informative and widely accepted.

Paris's views embody a rejection of epistemic reductionism. He writes,

In time, with the development of more powerful methods, research will no doubt tell us more about the relation between the brain and mental illness. However, a discrepancy between neuroscience and clinical phenomena is bound to persist because it is rooted in a conceptual gap between the mind and the brain. (2009: 515)

However, he goes on to confuse ontological with epistemic reductionism:

The second philosophical issue is the mind-brain problem: whether the mind and thought are equivalent to activity in the brain. Most neuroscientists, with only a few exceptions, have taken this equivalence for granted. However, if reductionism is wrong, the mind cannot be reduced to the brain, and should not be seen as nothing but the effects of neuronal activity. The alternative view is that mental processes, expressed in thought, emotion, and behaviour, are emergent properties of the brain. They cannot be understood in the same way as the sensory and motor processes dealt with by neurology. (515-16)

That 'the mind and thought are equivalent to activity in the brain' is a view accepted by '[m]ost neuroscientists' suggests—since ontological reductionism is uncontroversial—that by 'equivalent to' Paris means 'ontologically reducible to'. He takes this view to be opposed to the view that mental processes are 'emergent properties' which 'cannot be understood in the same way' as brain processes. However, the latter view involves a rejection of *epistemic*

reductionism, and is compatible with ontological reductionism. Paris overlooks this compatibility by failing to distinguish ontological from epistemic reductionism.

The Canadian Journal of Psychiatry's forum on reductionism, then, gives rise to some confusing accounts. The contributing authors conflate and equivocate between different types of reductionism. Moreover, their discussion mainly focuses on epistemic reductionism, and hardly at all on methodological reductionism. In the next two sections, we will consider why this is surprising, and how being clear about different sorts of reductionism could help facilitate progress in psychiatry.

Hasse Karlsson and Matti Kamppinen offer another dedicated account of reductionism in psychiatry (Karlsson and Kamppinen 1995). They explicitly distinguish ontological and epistemic reductionism; further, they identify another form of reductionism—causal reductionism—that they view as characteristic of the biomedical model. According to causal reductionism, neurobiological events (and only such events) cause mental events but not vice versa. Causal reductionism is stronger than ontological reductionism but weaker than epistemic reductionism. Causal reductionism, as Karlsson and Kamppinen note, implies that mental events cannot be affected by psychosocial phenomena. This makes causal reductionism, unlike ontological reductionism, inconsistent with BPS. Karlsson and Kamppinen follow Mario Bunge in advocating an emergent materialist approach, which involves ontological but not epistemic reductionism.

Despite offering a clear and explicit discussion of reductionism, Karlsson and Kamppinen's endorsement of ontological reductionism and rejection of epistemic reductionism do not take us beyond those reached decades earlier by BPS advocates such as Grinker and Engel. Further—like Grof, Gold, and Paris—Karlsson and Kamppinen do not discuss methodological reductionism, and so they do not consider how their emergent materialist views might be applied in research and treatment.

Whilst the papers just reviewed address the issue of reductionism directly, the topic also arises elsewhere in the psychiatry literature, including in work of particular relevance to BPS. Let us consider some such work.

Eric Kandel claims that all mental states ‘derive from’ brain states. As such, ‘what we commonly call mind is a range of functions carried out by the brain’, and ‘all of “nurture” is ultimately expressed as “nature”’ (1998: 460). He remarks that this sort of view is controversial, and quotes the Center for Advanced Studies in the Behavioral Sciences (CASBS)—‘probably the country’s premier think tank in the social sciences’ (Kandel 1998: 460)—objecting to the idea ‘that a living organism’s properties (not only its physical form but also its behavioral inclinations, abilities, and life prospects) are material and hence reducible to its genes’, and advocating instead ‘some type of radical mind-body dualism in which it is assumed that the processes and products of the mind have very little to do with the processes and products of the body’ (CASBS 1996, cited at Kandel 1998: 461). Kandel responds at length to CASBS’s ‘unease’ about reductionism.

Kandel’s defence against CASBS’s objection is unnecessary, however, since the objection does not apply to his position. He argues for an ontological reduction of mental states to brain states, whereas CASBS’s objection—in spirit, if not explicitly—applies to epistemic reductionism. By not distinguishing ontological from epistemic reductionism, Kandel both overestimates the extent to which his own view is controversial and devotes effort to defending his view against an irrelevant objection.

It is worth remarking on the fact that CASBS’s rejection of epistemic reductionism leads it to embrace dualism. Forced to choose between the two, this reaction is understandable. However, once we understand that one can endorse ontological reductionism while rejecting epistemic reductionism, dualism becomes less appealing.

A similar polarisation between a strong form of reductionism and mind-brain dualism is described by Glen Gabbard and by Kenneth Kendler. Gabbard observes that

As we contemplate the shape of psychiatry in the 21st century, one of the greatest risks we face is reductionism. Specifically, psychiatry is at risk of becoming a house divided against itself, with psychosocial specialists in one camp and neuroscientists in another. (2000: 117)

Similarly, Kendler sees the field as torn between “hard reductionism” (“all psychiatric illness is best explained solely in terms of molecular neuroscience”) and “hard emergentism” (e.g., “all psychiatric illness is best explained solely in terms of specified mental or social mechanisms and cannot be deduced from biology”)’ (2008: 696).

Neither Gabbard nor Kendler see this division as clear-cut. Rather, both paint a picture of contradiction and confusion in psychiatry. Gabbard comments that ‘[w]hile we *know* that mind and brain are inseparable, our literature and our practice do not always reflect that’ (2000: 117), and Kendler remarks that whilst ‘most modern psychiatrists and neuroscientists when pressed will deny being dualists ... their actions belie their words [and] a strong tendency remains for us to emphasize either a mentalistic mind-based or a biological brain-based view of illness’ (2012: 378).

Drawing distinctions between different sorts of reductionism helps clear the waters that these comments portray as hopelessly muddy. Gabbard and Kendler’s observations that psychiatrists purport not to be dualists can be read as indicating widespread acceptance of ontological reductionism, whilst their concern that a dualistic approach emerges in practice suggests that psychiatrists often do not view the mind as methodologically or epistemically reducible to the brain

Both Gabbard and Kendler go on to argue convincingly that the most promising approach to psychiatric illness lies in combining biological, psychological, and social perspectives. Even so, the sort of polarisation against which they are fighting could be resolved by emphasising that psychiatrists need not make the black-or-white choice between a strong form of reductionism and dualism. They may, instead, consider whether, how, and to what extent the mind is reducible to the brain; and which (if any) non-reductive relations hold between the biological, the psychological, and the social. This conceptual scaffolding would support the ‘truly integrative treatment strategies’ anticipated by Gabbard and the ‘dappled’ explanations of psychiatric illness described by Kendler. An integrative approach is unlikely to work in the absence of knowledge of what things are to be integrated and what (causal, conceptual, explanatory) relationships exist between them.

Ghaemi finds much to criticise in the overly eclectic BPS. He contrasts it with ‘[b]iomedical reductionism (“the medical model”)’ (Ghaemi 2009: 4), which he describes as ‘dogmatism’. He takes dogmatism to involve treatment-methodological reductionism: regarding treatment, ‘[d]ogmatists hold that one method is sufficient’ (2009: 4). By contrast, biopsychosocial eclectics [hold] that methods should always be combined’ (2009: 4). Ghaemi sees both views as unattractive. Instead, he advocates a ‘method-based psychiatry’ inspired by Karl Jaspers:

Rather than advocating one or the other method, Jaspers called for methodological consciousness: we need to be aware of what methods we use, their strengths and limitations, and why we use them. ... Jaspers [believed] that (depending on the condition) sometimes one, sometimes another, method is best. (2009: 4)

Ghaemi's view that, according to BPS, treatment 'methods should always be combined' contrasts with his view less than a page previously, where he complained that the 'eclectic freedom' of BPS 'borders on anarchy' (I quoted this complaint in full in section 1). Given its lack of guidance about treatment, BPS is compatible with the method-based approach advocated by Ghaemi. Indeed, this approach is a good candidate for the sort of useful methodological guidance that BPS has historically failed to provide. As a result, the very approach that Ghaemi proposes as offering an alternative to BPS may in fact complement and strengthen it.

Ghaemi's criticism of BPS is fuelled by confusion about different forms of reductionism. He associates BPS with 'additive eclecticism (more is better)' (2009: 4), by which he means 'truth is achieved by adding more and more perspectives, getting closer and closer to a highly complex reality' (2009: 4). He ascribes this view to Engel and Grinker. However, whilst additive eclecticism may capture Grinker and Engel's view that biological, psychological, and social perspectives are all relevant to *understanding* mental illness, Ghaemi is wrong to take either Grinker or Engel to believe that *treatment* must always involve biological, psychological, and social factors. In fact, both Grinker and Engel expressed the reverse of this view. Grinker wrote:

I have little use for the pleas to utilize holistic approaches operationally. The scientist has to focus, with a particular frame of reference and from a specified position, on a part of the world of man. Yet unified or holistic concepts in general are important as organizing principles for the understanding of general processes. (Grinker 1966, cited at Ghaemi 2010: 35)

Grinker's 'little use' for 'pleas to utilize holistic approaches operationally' suggests that he does not insist upon always including biological, psychological, and social factors in treatment. His assertion that 'unified or holistic concepts' are important in 'understanding ... general processes' indicates that he takes biological, psychological, and social factors to be relevant to understanding mental illness.

Engel's position is similar. Ghaemi quotes Engel's claim that 'all three levels, biological, psychological, and social, must be taken into account in every health care task' (Engel 1978: 164, cited at Ghaemi 2009: 3). But this claim appears in the conclusion of an argument for *conceptualising* patients and their conditions in BPS terms (Engel 1978: 161–62). It does not relate to the treatment methods that one selects. Indeed, Engel remarks that in selecting the appropriate treatment for the clinical case discussed in the paper, 'differences between the [biomedical] reductionist and [BPS] systematist temporarily vanish' (1978: 162), with adherents to each approach choosing 'identical' treatments. Whilst Engel's claim amounts to a rejection of epistemic and research-methodological reductionism, then, he did not advocate that treatment must always include biological, psychological, and social elements.

So far in this section, we have considered some confused views about reductionism in psychiatry. Whilst I have not encountered any adequately fine-grained treatment of this issue, some writers demonstrate an awareness of some of the distinctions at stake. Such awareness is demonstrated by Gabbard and Kendler, both of whose views we considered above.

Gabbard's later views about reductionism are clearer than those expressed in his 2000 paper. Writing with Jerald Kay, he acknowledges that, '[w]hat we commonly refer to as "mind" can be understood as the activity of the brain', yet 'the language of psychology and the language of biology involve two different levels of discourse when working with a patient. The biopsychosocial psychiatrist must be conceptually bilingual' (Gabbard and Kay

2001: 1959). So, Gabbard and Kay distinguish—albeit not in name—ontological and epistemic reductionism.

Kendler provides a clear and sophisticated defence of the claim that the causes of psychiatric conditions are ‘dappled’; that is, ‘distributed widely across multiple categories’ (2012: 377) that span all three BPS levels. He recognises a distinction between ontological and epistemic reductionism. He notes that since we have first-person knowledge of our own minds but only third-person knowledge of other minds,

from the perspective of knowledge—what philosophers call epistemology—the [human mind/brain system] has an important first and third person divide. But in terms of what exists—what philosophers call ontology—no such discontinuity exists. (2012: 378)

Let us conclude this section by reviewing a 2005 editorial by Thomas Insel and Rémi Quirion, which is seen by many as implausibly reductive. Their view that ‘mental disorders [should] be understood and treated as brain disorders’ (2005: 2221) is *prima facie* suggestive of ontological, epistemic, research-methodological and treatment-methodological reductionism; in other words, all the forms of reductionism considered in this paper. As we have seen, Insel and Quirion’s approach—which they term *clinical neuroscience*—has been attacked by Gold. It was also criticised by the philosophers George Graham and Owen Flanagan, who argued that without reference to psychosocial phenomena, the existence of some mental disorders cannot even be recognised. For example, gambling addiction arises when a generally valuable reinforcement schedule operates in certain environments. Gambling addiction is not, then, a brain disorder: the brain of a gambling addict ‘is behaving as it should from a biological point of view’ (Graham and Flanagan 2013). To conceive it as a

disorder, one must consider psychosocial factors, such as the effects of gambling on the gambler's relationships and finances.

However, Insel and Quirion also acknowledge the limitations of reductionism and even express non-reductionist views. For example, whilst advancing a view of 'mental disorders as complex genetic disorders' (to quote one of their section headings at 2005: 2221), they emphasise the importance of recognising the 'limitations of genetics for complex illnesses, such as schizophrenia' (2005: 2221) and comment that 'it is not clear that genetics research will yield a binary diagnostic test for most of the psychiatric disorders. Nevertheless, identifying genetic variations associated with disease should provide a gateway into pathophysiology' (2005: 2221). Further, they note that the role of genes in mental illness is mediated by 'the environment, in both a social and physical sense' (2005: 2221). These comments do not themselves reflect epistemically or research-methodologically reductionist views; they reflect, rather, a view that a BPS perspective is relevant to a comprehensive understanding of mental disorders.

Insel and Quirion offer, in addition, a clear rejection of treatment-methodological reductionism:

The need for a sophisticated understanding of interpersonal relationships along with the use of evidence-based, nonpharmacological treatments (from psychoeducation to cognitive behavioral treatments) will be the tools of the effective healer in the future as much as in the past. Just as the need for rehabilitation following acute care for any serious injury or medical illness has been recognized, ideally the psychiatrist will increasingly be part of a team that provides culturally valid psychosocial rehabilitation along with medications to help those with mental disorders recover and return to a productive and satisfying life.

What will be different is having the ability to target these treatments to specific aspects of the disease process. (2005: 2223)

This approach to treatment—especially the indication in the final sentence that different treatments may be best directed to specific aspects of disorders—resembles the method-based approach advocated by Ghaemi. This similarity is particularly evident in Ghaemi’s comment that ‘eclecticism is rejected: there are right and wrong methods to use; dogmatism is also rejected: the same method is not used for all conditions’ (Ghaemi 2011).

The views expressed in Insel and Quirion’s editorial culminated eventually in the Research Domain Criteria (RDoC) project under Insel’s leadership at the US National Institute of Mental Health. This project increased the emphasis on biology in psychiatric research. Whilst welcomed by some, others have been alarmed by what they have seen as its overly reductive approach.¹ A detailed evaluation of RDoC is beyond our scope here, but our lesson from our reflections on Insel and Quirion’s views can be as follows. In debating the merits of a view that strikes many as overly reductive, being clear about in what respects and in what sense the view is reductive is likely to facilitate productive discussion better than is arguing about whether the view is too reductive in general. Such clarification could, in addition, help identify areas of agreement—as when we compared Insel and Quirion’s comments on treatment to Ghaemi’s remarks about the sort of method-based approach that we have seen to be consistent with BPS. Clinical neuroscientists and BPS advocates equally have much to gain from an analysis of the relationship between the biological, the psychological, and the social.

Why does clarity about reductionism matter?

Given that the question of whether and how the mental is reducible to the physical is an abstract one, psychiatrists may wish to know how thinking about reductionism can help further the aim of improving the lives of people suffering from mental distress. What advances in psychiatry might we hope for following from clearer thinking about reductionism in psychiatry?

Broadly, the answer to this question is that clearer thinking about the relationship—reductive or otherwise—between mind and brain can help psychiatrists work out where best to focus their efforts in order to achieve their aims more effectively. Most obviously, if the ultimate aim of psychiatry is to relieve mental suffering, then we might expect psychiatrists' theorising about reductionism to focus primarily on treatment- and research-methodological reductionism. This is because working through issues in these areas aims at making progress clinically: at developing treatments, and at making insights into research methods intended to lead ultimately to developing treatments. Our analysis of various psychiatrists' accounts of reductionism reveals that very little of their work focuses on methodological reductionism. For any psychiatrist whose interest in reductionism is motivated primarily by a desire to bring about improvements in patients' symptoms, this looks like misdirected effort. But this concern comes to light only after reflecting on the various sorts of reductionism that apply to psychiatry.

It would be too strong to claim that psychiatrists interested in reductionism should concern themselves *only* with methodological reductionism, however. The focus of much discussion in psychiatry is broader than questions of methodology in research and treatment. Much work in psychiatry focuses instead on understanding what sort of thing mental illness is, and how it and the experiences of patients can best be conceptualised and described. This work informs clinical insights about how to research and ultimately relieve mental suffering,

but its immediate intended outcome is increasing understanding rather than producing advances in research and treatment methods. Answering questions relating to ontological and epistemic reductionism helps further this understanding, and grasping the differences between ontological and epistemic reductionisms is an important step along the way.

In the next section, we will look in greater detail at how confusion about reductionism can present an obstacle to progress in psychiatry.

Reductionism in psychiatry: the real issues

This incomplete review of discussions of reductionism in psychiatry highlights several ways in which the task of assessing how biological, psychological, and social contributions to mental illness combine and relate is confounded by inadequately clear thought about reductionism. Let us summarise some of the ways in which this happens.

- i. By not distinguishing different types of reductionism, reductionism may be viewed as overly strong. Most commonly, reductionism is assumed to involve epistemic reductionism.
- ii. Those who view reductionism as implausibly strong sometimes respond by embracing a contrasting but equally implausible position, like dualism.
- iii. Failure to distinguish different types of reductionism results in a focus on the wrong reductionist issues. In particular, methodological reductionism is neglected, despite being the type of reductionism most directly relevant to psychiatry.
- iv. Conflating or equivocating between different types of reductionism can make sensible views about psychiatry appear implausible. This often happens when psychiatrists implicitly endorse ontological but not epistemic reductionism.
- v. Failure to distinguish types of reductionism can lead psychiatrists to overlook similarities between views, and possibly to miss opportunities to unite in a common cause as a result.

Progress could be made towards a BPS account of mental illness if BPS advocates were to set out which sorts of biological, psychological, and social properties are relevant to understanding mental illness. This would facilitate a clearer picture of the relationships—including reductive relationships—that hold between the properties in question, which in turn will enable improved understanding of how the BPS levels are best combined to understand and treat mental illness. This is a conceptual task, but it can draw on existing empirical work to identify causal relationships between biological, psychological, and social aspects of mental illness. That this detail is currently lacking is illustrated by the fact that discussions of BPS tend not to draw a threefold distinction between the three levels; instead, they draw a twofold distinction between the biological and the psychosocial. This disguises the fact that the social is the least adequately defined of the three levels. It is unclear whether it should be defined narrowly so as to correspond, for example, to sociology; or whether it should be viewed more broadly as encompassing insights from various social sciences and perhaps also ‘folk’ ideas about health and illness.

Ghaemi criticises BPS for failing to define its terms adequately. He argues that it depends upon an implausibly narrow conception of biology:

In this tradition, derived from positivism, the environment and personal experience is excluded, and biology is identified with genes and cells and molecules, conceived in isolation. Current views of biology and disease are much more broad, incorporating interactions of genetics and environment into the very definition of the biological. Perhaps Engel meant to promote this approach with the BPS label, but it could simply be called a biological model, properly conceived. (Ghaemi 2011)

Ghaemi also argues that ‘psychological’ and ‘social’ are not clearly defined; consequently, BPS ‘can be stretched in any direction’ (Ghaemi 2011), enabling any given illness to be deemed biopsychosocial.

Ghaemi implies that BPS advocates must clarify what *in general* is meant by the biological, the psychological, and the social. Since not all biological, psychological, and social properties are relevant to mental illness, this is unnecessary. BPS advocates may focus on a relevant sub-set of those categories.

What the relevant properties are will determine what sort of theory BPS is. As science advances, some of today’s psychological and social properties may come to be encompassed by biology. If *all* relevant psychosocial properties are ultimately encompassed by a future biology, then BPS will become obsolete: it would be superseded by a (new, broader) biological approach. Since it is an empirical matter how the field of biology might develop in the future, it is an empirical matter whether certain current psychosocial properties will one day count as biological.ⁱⁱ And since, in that event, those once-psychosocial properties would be comprehensively (if trivially) reducible to biology, it might be that Gold is correct to claim that it is an empirical matter whether reduction in psychiatry will be successful.

Conclusion

Specifying how our conscious experience arises from a biological substrate is arguably philosophy’s most intractable problem. Yet whilst, at the most fundamental level, nobody fully understands how we come to have conscious experiences, we look to psychiatrists to fix us when our ability to produce normal experiences goes wrong—when, for example, we become depressed or psychotic. Psychiatrists, then, must find practical solutions in an area where the most fundamental conceptual questions remain unanswered. In the absence of such answers, psychiatrists need the conceptual tools necessary to make the best

use of existing knowledge about the mind and its ailments. In particular, they need the conceptual tools necessary to compare and combine biological, psychological, and social accounts of mental illness. An understanding of the various forms of reductionism in psychiatry forms an important set of these tools.

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ⁱ For a flavour of the range of reactions to RDoC, see *World Psychiatry's* 2014 forum on RDoC, in which a paper authored by Bruce Cuthbert—who led the RDoC project—is accompanied by twelve commentaries (Cuthbert 2014).

ⁱⁱ This uncertainty about what a future biology will look like makes any claims about whether or not all mental illness can ultimately be conceived in purely biological terms vulnerable to a problem analogous to that described by Carl Hempel in what has come to be known as 'Hempel's Dilemma'. See Hempel 1970; Crane and Mellor 1990.