The Monist

An International Journal of General Philosophical Inquiry

October, 1999 Volume 82, Number 4

General Topic:

Cognitive Theories of Mental Illness

Contributors
Brendan A. Maher
A. W. Young
Philip Gerrans
John Campbell
Kai Vogeley
Valerie Gray Hardcastle & Owen Flanagan
Robert L. Woolfolk

Editor Barry Smith
Advisory Editor Joëlle Proust

THE MONIST

An International Quarterly Journal of General Philosophical Inquiry
FOUNDED 1888 BY EDWARD C. HEGELER

Editor: BARRY SMITH
Managing Editor: SHERWOOD J. B. SUGDEN
Production: CRAIG W. O'DELL

Historical Note: Paul Carus

Paul Carus, the first editor of *The Monist*, was born in Ilsenberg am Harz on July 18, 1852, and died in La Salle, Illinois, on February 11, 1919. After receiving his Ph.D. degree in philosophy and classical philology from Tübingen University in 1876, he taught briefly at the State Military Academy at Dresden. In search of freedom for expression of his independent views, he migrated first to England and then to the United States. In 1887, he accepted the invitation of Edward C. Hegeler (who later became his father-in-law) to edit *The Open Court* magazine, a monthly journal devoted primarily to comparative religion. In 1888, *The Monist* was established as a quarterly journal of the philosophy of science, and Paul Carus served as editor of both journals and as editor of the Open Court Publishing Company until his death in 1919.

SUBSCRIPTION RATES: United States: Annual (4 issues): Institutions, $50.00; individuals, $30.00; 2 years institutions, $90.00; individuals, $50.00. Single copies: $12.00. Foreign postage: Add $2.00 to single copy rate or $2.50 per year of subscription.

Checks should be made payable to THE MONIST and addressed to THE MONIST, P.O. Box 600, La Salle, Illinois 61301

Correspondence concerning manuscripts should be addressed to
Barry Smith, Editor, THE MONIST
Department of Philosophy
University at Buffalo
State University of New York
135 Park Hall
Buffalo, NY 14260–4150 USA

THE MONIST, Vol. 82, No. 4

La Salle, Illinois 61301
Published by The Hegeler Institute

SCHIZOPHRENIA, THE SPACE OF REASONS, AND THINKING AS A MOTOR PROCESS*

1. Thought Insertion as an Error of Identification

Ordinarily, if you say something like "I see a comet," you might make a mistake about whether it is a comet that you see, but you could not be right about whether it is a comet but wrong about who is seeing it. There cannot be an "error of identification" in this case. In making a judgement like, "I see a comet," there are not two steps, finding out who is seeing the thing and finding out what it is that is being seen, so that you could go wrong at either step. The only place to go wrong is in your description of what is being seen. We usually take it that the same point applies to present-tense ascriptions to oneself of psychological states in general. You can get it wrong about which psychological state you are in, but you cannot get it right about the psychological state but wrong about whose psychological state it is. In contrast, in a room full of people, I might hear a noise and conclude, "Bill sneezed," and in this case I could be wrong either about who it was that sneezed or about whether it was a sneeze, rather than say a death-rattle.

This point seems to apply to knowledge of your own thoughts. If you say, "I am thinking about Vienna," we would ordinarily think that you cannot be right that someone is thinking about Vienna, but wrong about who it is that is doing that thinking. What is so striking about the phenomenon of thought insertion as described by schizophrenic patients is that it seems to involve an error of identification. The patient might say, "Thoughts come into my head like 'Kill God'. It's just like my mind working, but it isn't. They come from this chap, Chris. They're his thoughts." (Frith 1992, 66). A patient who supposes that thoughts have been inserted into his mind by someone else is right about which thoughts

"Schizophrenia, the Space of Reasons, and Thinking as a Motor Process" by John Campbell, *The Monist*, vol. 82, no. 4, pp. 609–625.

they are, but wrong about whose thoughts they are. So thought insertion seems to be a counterexample to the thesis that present-tense introspectively based reports of psychological state cannot involve errors of identification. Frith himself puts the point succinctly. He says:

> Thought insertion, in particular, is a phenomenon that is difficult to understand. Patients say that thoughts that are not their own are coming into their head. This experience implies that we have some way of recognising our own thoughts. It is as if each thought has a label on it saying 'mine'. If this labelling process goes wrong, then the thought would be perceived as alien.
>
> (Frith 1992, 80)

The view that there is here a labelling process that can go wrong is exactly the idea that self-ascriptions of thoughts are subject to mistakes about whose thoughts they are, that errors of identification are possible. Cahill and Frith 1996 give a vivid example:

> . . . patients report that they feel the thoughts which occur in their heads as not actually their own. They are not experienced as thoughts communicated to them . . . but it is as if another's thoughts have been engendered or inserted in them. One of our patients reported physically feeling the alien thoughts as they entered his head and claimed that he could pin-point the point of entry!
>
> (Cahill and Frith, 1996, 278)

At the very least, these reports by patients show that there is some structure in our ordinary notion of the ownership of a thought which we might not otherwise have suspected. The thought inserted into the subject's mind is indeed in some sense his, just because it has been successfully inserted into his mind; it has some special relation to him. He has, for example, some especially direct knowledge of it. On the other hand, there is, the patient insists, a sense in which the thought is not his, a sense in which the thought is someone else's, and not just in that someone else originated the thought and communicated it to the subject; there is a sense in which the thought, as it were, remains the property of someone else. It is not really enough to say that we can make no sense of them; these are compelling reports of experience which many people agree in giving; at the very least we should want to understand why it is so natural, so compelling, to describe experience in this way.

Perhaps the most general philosophical issue raised by the phenomenon of schizophrenia is the extent to which an understanding is possible

of what the patient is saying. One patient remarked that when he speaks, the words he uses have both the meanings they ordinarily bear, and the meanings he is trying to use them to express. If we simply write off reports of thought insertion, for example, as incoherent, we block any attempt at understanding his meaning. I will try to show that we can illuminate the problems of meaning here by looking at the explanation of thought insertion.

2. Frith's Model of Schizophrenia

One way to proceed at this point is to look at one influential and powerful model of schizophrenia, to see what light it might shed on self-ascriptions of thought. The model I have in mind is Christopher Frith's (1992) account. This approach views schizophrenia as fundamentally a deficiency in the sense of agency. Certainly one of the symptoms of the disease is that the subject makes mistakes about who is causing various bodily movements. This is particularly common in the case of speech. The patient may say, "The force moved my lips. I began to speak. The words were made for me." (Frith 1992, p. 66). The movement of the lips was in fact brought about by the patient. No one else caused his lips to move in that way. But still, the patient makes a mistake about who produced the bodily movement. To understand this phenomenon we need to understand how it is that we ordinarily do have knowledge of agency, so that we can see what might be going wrong in the case of the patient.

There is a classical theory, first stated about fifty years ago, that in general, when a motor instruction is sent for bodily movement, a copy of that instruction—the "efference copy"—is also sent to some other centre. There are many different uses that might be made of this efference copy, depending on the type of motor instruction in question. For someone wearing laterally displacing prisms, everything looks to be somewhat to the left of where it really is. But after wearing them for a while, people unreflectively reach to the correct place to grasp something they see. Held 1961 suggested that copies of the motor instruction are sent to a comparator, stored there, and compared to the proprioceptive or visual—"reafferent"—information about what movement was actually made. Whether there was match between the motor instruction sent and the effect achieved determined which motor instructions were sent on later occasions. Held proposed that this model also explained why developing

normal motor skills also depends on the subject making self-generated movements rather than moving passively (cf. Jeannerod 1997, ch. 6). In a mature subject, this mechanism can also be used for the rapid correction of errors. If a copy of the motor instruction is sent to a monitor, it should in principle be possible for the monitor to check whether that instruction is appropriate, and to countermand or modify the instruction without having to wait for the action to be performed, receive proprioceptive or visual feedback and then correct it. Something like this presumably happens when we start to speak, then think better of it.

This kind of picture, which is ubiquitous in motor-control theory, does not at all depend on thinking of the comparator to which the efferent copy is sent as somehow the locus of all consciousness in the brain. One way to defuse that idea is to stress that there may be no single central monitor to which all efferent copies are sent; there may rather be a large number of regional monitors, as it were, distributed throughout the brain, and no single centre. Nonetheless, it may be that in the cases in which we do have a sense of agency, in which the movement performed is felt to be your own, what grounds that sense of agency is match at the relevant comparator between the efferent copy and the sensory feedback you have about the movement. What explains the feeling that it is you who moved your arm is that at the comparator, an efferent copy was received of the instruction to move your arm which matches the movement you perceive. What explains the feeling that your arm was passively moved, perhaps by someone else, is that there is no efferent copy at the comparator of an instruction to move the arm in a way that matches the movement you perceive. On reflection, it also seems that this is not just one possible theory; it is the simplest theory which has any prospect of explaining the sense of agency, and we ought to work from it, introducing complications only as necessary.

This view, which was so far as I know first articulated in this sharp form by Jeannerod (in press), does not depend on supposing that the efferent copy is itself available to consciousness. Indeed there is evidence that it is not. For example, in one set of experiments, subjects had to reach for a target which was moved some distance during saccadic eye-movements by the subject. In reaching, subjects changed their trajectory to reach to the new location of the target, but, when asked, maintained that

the target had stayed in the same place throughout; they were not conscious of its movement, nor of any change in the way their limbs were moving. So the content of the efferent copy seems to be part of the low-level control of action, rather than being consciously available. Another set of experiments reinforces this result. In these experiments, subjects had to use a stylus to draw a straight line in the saggital plane on a digital tablet. They could not see the tablet or stylus directly, but had to watch what was happening on a computer screen showing the line being drawn. In the course of the experiment, a bias was introduced so that subjects had to draw a line veering off to the left in order for a straight line to be produced on the screen. If the content of the efferent copy were consciously available, people drawing a line that veered off to the left should have been aware that they were doing so. But in fact, people in this condition claimed that they had simply pushed the stylus straight ahead. So again, the content of the efference copy does not seem to be consciously available. Nonetheless, it is consistent with this to suppose that whether or not a perceived movement is experienced as one's own depends on whether or not there is match at the comparator between the sensory perception of the movement and an efference copy (Jeannerod in press; cf. Daprati et al. 1997). Whether you have the sense of agency may depend on whether there is in fact match at the comparator, even though you do not have access to the content of the efferent copy. And as I said, this seems to be the simplest possible hypothesis to explain the basis of the sense of agency.

If this is correct, then a breakdown in the mechanism of efferent copy and comparator would result in the breakdown in the sense of agency that is characteristic of schizophrenia. Frith 1992 argues that there is evidence from two types of experiment that schizophrenics have a problem with monitoring movements. In both types of experiment subjects had to use a joystick to move an arrow on a computer screen. In the first experiment, subjects had to follow a target on the screen. In following the target, it is easy to make errors, and if you see that you have made an error you can move to correct it. This will take some time, because the action has to be executed, and the consequences seen and assessed, before the correction can be made. But normal subjects can also correct errors very rapidly, before any visual feedback is available. In making these rapid error cor-

rections, they are presumably monitoring the response instruction, the central plan being executed, and making fast checks on whether the instruction is correct, without having to wait for perception of what actually happened. So you can spot that an instructed response was a mistake after having initiated it, but before the consequences of the response are visible.

If schizophrenic patients cannot monitor their own motor instructions, then they should be unable to make these rapid error corrections. Frith and his colleagues confirmed that schizophrenic patients corrected their errors just like ordinary people when visual feedback was supplied, but unlike ordinary people, failed to correct their mistakes when there was no visual feedback. In the second experiment, subjects were asked to copy simple geometric designs onto the screen by moving a joystick or by pressing keys. In one phase of the experiment subjects could see the results of their actions on the screen; in another phase of the experiment they could not. Obviously if you cannot see the figure you are producing on the screen your correction of errors will depend more heavily on central monitoring of your intended actions. Again, schizophrenic patients performed poorly when their performance depended on central monitoring. Frith's conclusion is that there is in schizophrenia an impairment of self-monitoring.

This is subtle, unexpected prediction of the above account of the sense of agency. What is striking is that the patients who had this kind of impairment of self monitoring were just those who displayed a breakdown in the sense of agency. That is, they displayed Schneiderian "first rank" symptoms, in which a patient's own feelings, wishes or actions seem to be alien and under external control. For example, there is "thought insertion," or the delusions of having one's speech controlled by another. Frith's proposal is that in these cases the patient is issuing the motor instructions needed to produce these thoughts or actions, but because of the problems with central monitoring, the central monitor does not receive a copy of these motor instructions, and so has the feeling that the thoughts or actions must have been planned by some external agent, though executed by him. Frith uses this analysis to give an "output" account of some of the auditory hallucinations suffered by schizophrenics; on this account the patient is talking to himself, but perceives the speech as being planned by someone else (84).

3. Is Thinking a Motor Process?

The philosophically most striking aspect of this theory is its application to thinking. The view of thinking as a motor process was, so far as I know, first developed by Feinberg 1978. He speaks of "corollary discharge" where I have been speaking of "efferent copy." Feinberg's idea was that we should "consider what consequences might ensue if conscious thought shared some properties of simpler motor acts, including internal feedback or corollary discharge. . . . Whereas the internal feedback associated with simpler motor acts is below the level of consciousness, one might postulate that the corollary discharges accompanying conscious thought are themselves conscious. If so, the subjective experience of these discharges should correspond to nothing less than the experience of will or intention. . . . If thought is a motor process heavily dependent upon internal feedback, derangement of such feedback might account for many of the puzzling psychopathological features of the 'psychosis of thinking'." (pp. 637–38).

One central phenomenon of the "psychosis of thinking" to which Feinberg refers is thought insertion, the experience with which I began, in which the patient feels that alien thoughts are being inserted into his mind. Feinberg's proposal was that this delusion can again be explained by viewing thinking as a motor process, and supposing that for the schizophrenic, something has gone wrong with the monitoring of efferent copies of instructions to think thoughts, so that the subject finds himself lacking in any sense of being the agent of a thought of which he has immediate introspective knowledge.

As we shall see, there are a number of ways in which the above formulation of Feinberg's can be cleaned up. But notice first one merit of this idea. It does promise to explain why there should be such a thing as a mechanism whose malfunction results in the experience of thought insertion. This does need some explaining. It is not as if we have any need for a mechanism whose sole function is to check whether the thoughts you encounter in consciousness actually belong to you or to someone else. There would be no evolutionary purpose for such a mechanism. You might say that perhaps there was an early stage in human development at which people did actually insert thoughts into each others' minds, to the detriment of the recipient, so that there was selection value in developing

a mechanism to check whether the thoughts you encountered in consciousness were your own or someone else's. But that seems a remote possibility. So whatever mechanism is going wrong in schizophrenia, it cannot be one whose sole purpose is to check up on whether the various thoughts you encounter are really yours. The merit of Feinberg's proposal is that the mechanism he describes does have another function, namely to keep your thoughts on track, to check that the thoughts you actually execute form coherent trains of thought; this is what distinguishes the thinking of an ordinary subject from the formal thought disorder of the schizophrenic. But notice also that if central monitoring is to be what ensures that we do not have formal thought disorder, then it needs access to the contents of the planned thoughts.

There are special problems for this picture, as it applies to conscious thoughts. Conscious thoughts are obviously not, in general, the upshot of conscious intentions to think those very thoughts. In fact it is also not quite obvious how there could be motor instructions to think thoughts. The intuitive problem is that we have a contrast between executive and motor functions, and we tend to think of the executive functions as being what determine which motor plans are put into effect. So if the apparatus of motor instruction and efferent copy applies to thinking, there must presumably be some executive processes underlying the issuing of motor instructions, which determine the content of our thoughts. If this is the right picture, then the schizophrenic's picture of the world does not actually seem too far wrong: something else—this executive process in the brain, not you—is determining which thoughts you will have. It is hard to take this seriously: we do ordinarily suppose that thinking is the paradigmatic executive process, and we should not let go of that insight. But once we accept that thinking is an executive process, it is hard to see how it can be regarded as being itself a motor process. For it is not immediately obvious what the source of the motor instructions might be.

Our commonsense picture of the causation of conscious thought is that it depends on a background of beliefs, desires and interests, most of which are not themselves conscious at any one time. For example, if you are idly looking out of the window, your idle thoughts will be about people you know or plans you have. Of course, seeing something unexpected, as you look out of the window, can be the cause which opens up new trains of thought. But which trains of thought are opened up will

depend on your particular background of beliefs, desires, and interests. Different people could see the same thing yet have quite different thoughts in consequence. This dependence of which thoughts you have on your underlying psychology has to do with our sense of the ownership of thoughts: that the particular thoughts you have belong to you, rather than being shared by many people.

We tend, then, to think of our occurrent thoughts as being caused by a combination of our background beliefs, desires, and interests, together with current external stimuli. And this seems to be in opposition to the idea that occurrent thoughts are produced by motor instructions. But I think that it is not, in fact, inconsistent with the view of thinking as a motor process. For there must after all be something to be said in detail about how it is that your background states do produce an occurrent thought. And it may well be that what mediates between the background beliefs and desires, on the one hand, and the formation of the occurrent thought, is the issuing of a motor instruction. What happens is that the background beliefs and desires cause the motor instruction to be issued, and that the motor instruction causes the occurrent thought. You might ask why there should be this intermediate stage in the causation, the issuing of the motor instruction, rather than direct causation of the occurrent thought. But the answer proposed is that thinking of it in this way lets us see how it could happen that the issuing of the motor instruction is accompanied by the issuing of an efferent copy, so that the ongoing stream of occurrent thoughts can be monitored and kept on track. The proposal is that this is what rescues ordinary subjects from the formal thought disorder found in schizophrenics. When the efferent copy is not properly used by central monitoring, we have the jumble of occurrent thoughts characteristic of schizophrenia.

Moreover, on this account, it is the match between the thought detected by introspection, and the content of the efferent copy picked up by the comparator, that is responsible for the sense of ownership of the thought. So when things go wrong, as with the schizophrenic, with central monitoring, the sense of ownership of the occurrent thought will be disturbed too.

In the passage from Feinberg with which I began this section, he states his view as being that the corollary discharge, or efferent copy, from a motor instruction to think a particular thought is itself conscious, so that disturbances in this mechanism would lead to disturbances in your conscious

experiences of thoughts. This would, I think, lead to a quite implausible account of ordinary knowledge of your own thoughts on which you had, as it were, a "double awareness" of their contents, once as the contents known by introspection, and once as the contents of the efferent copies. But the model I set out in §2 suggests a different way of developing the picture. You have knowledge of the content of the thought only through introspection. The content of the efferent copy is not itself conscious. But it is match at the monitor between the thought of which you have introspective knowledge and the efferent copy that is responsible for the sense of being the agent of that thought. It is a disturbance in that mechanism that is responsible for the schizophrenic finding that he is introspectively aware of a thought without having the sense of being the agent of that thought.

It was Feinberg who first suggested that efference copy may be used to control the organisation of thinking: "Disturbances of the organization of thinking (formal thought disorder) would be . . . a consequence of impaired internal feedback, for such feedback would be crucial for the hierarchical programming of thought processes." (p. 638). It is important to Feinberg's picture that efferent copies are provided at many levels, and that consequently there are many levels at which the feedback system may be impaired: 'Clinical experience suggests that delusional behaviour and degree of formal thought disorder are not highly correlated. The mechanisms postulated here could account for this lack of correlation, since the particular symptoms produced would depend on the locus of the deranged feedback loops (appetitive-cortical as opposed to intra-cortical, for example).' (p. 638). Frith has since set this view in a much broader and deeper context, and provided more on the relation between the loss of sense of agency and formal thought disorder.

You might think that there is a special problem for this view, in that for the thought-monitoring process, keeping us from falling into formal thought disorder, has to be supposed to have access to the full semantic properties of the thoughts we are having. But, you might protest, does it really make sense to suppose that a sub-personal cognitive module does have this kind of access? I actually agree with this protest, that it does not in general make sense to suppose that sub-personal cognitive modules have access to the semantic properties of conceptual thoughts or natural language. But it seems to me that the exception is when we are dealing

with sub-personal cognitive modules that mediate between different sets of personal-level propositional states. Consider, for example, how you maintain the relevance of your contributions in an ordinary conversation. The processes involved here are not in general consciously available; it takes experiment and observation to determine just how you are doing it. But the inputs to these processes will be your knowledge of the meanings of various utterances, and the outputs will be your knowledge of which things to say. So there does not seem to be any particular problem about supposing that these intermediate processes, though not consciously available, may have access to a range of semantic properties of conceptual thought.

This kind of approach to the formation of occurrent thoughts does not need to deny that one input to the formation of an occurrent thought may be the earlier occurrent thoughts that you had, as when you are following through some train of thought. On this picture, the earlier occurrent thoughts will be yet more inputs to the formation of motor instructions.

It is still consistent with this account to say that there is a sense in which conscious thinking is a fundamental executive process. It may itself generate ranges of motor instructions, as when you consciously plan some particular course of action. And the level of long-standing, dispositional beliefs, desires and knowledge which is the source of the motor instructions to think particular thoughts is not itself more fundamental than the level of conscious thought. For occurrent conscious thought is one of the basic ways in which we form and modify our long-standing dispositional states, as when you think it through and make up your mind what you think about a particular topic.

4. Immunity to Error Again

I began by describing the experience of thought insertion as an error of identification, though it is sometimes taken to be a logical point that judgements about one's own current thoughts are immune to errors of identification. You might then wonder whether the schizophrenic's illusion is really coherent. That is, you might agree that the form of words I am recommending—that the schizophrenic has introspective knowledge of a thought of which he does not recognise himself to be the agent—does best elucidate the content of the illusion of thought insertion, but wonder whether the illusion really makes sense. It might be like an Escher drawing,

an illusion which is compelling but which has no coherent content. We might compare thought insertion with causation of your actions by another. Of course, such things are not very likely to happen, given that all causation must have a physical basis and that there is no very apparent physical basis by which the causal influence might be propagated across persons. But it does not seem to be actually incoherent to suppose that one person might control the actions of another. Your body could be used as a puppet, your bodily movements could be under the intentional control of someone else. It is unlikely that this would happen, but the hypothesis seems to make sense.

Does the alien control of thoughts make sense? Does it make sense to suppose that your mind might be taken over by someone else, that the movements of your mind might be functioning like the movements of a marionette in someone else's hands? The image of the marionette suggests intentional control: the other person is intending that you should think particular thoughts. Of course, it is commonplace to try to get someone to think a particular thought, by providing the subject with suitable evidence, for example, but what is in question here is something more immediate, where the intention is executed without going by way of any instrumental process. But it is hard to see that this immediacy of itself makes the hypothesis incoherent. Alternatively, there is the idea that you might be having occurrent thoughts which are expressions of someone else's long-standing dispositional states. But if your own long-standing dispositional states can produce occurrent thoughts in you, it is hard to see why it is straight off incoherent to suppose that someone else's long-standing dispositional states might produce occurrent thoughts in you.

The schizophrenic seems to find himself with first-person knowledge of a token thought which was formed by someone else. It is easy but mistaken to represent the patient as saying something which is straightforwardly self-contradictory; that he is having thoughts which are not his, for example. But the content of the schizophrenic's illusion is that he has first-person knowledge of token thoughts which were formed by someone else. And there is no immediate contradiction in that.

I think there is a longer-term problem about the stability of meaning here, though. It does seem to be fundamental to our ordinary psychological lives that our occurrent thoughts and long-standing propositional states are interwoven. Our occurrent thoughts are partly caused by our long-

standing propositional states, and may in turn affect them. One way in which this interwovenness is fundamental has to do with identity. It is a familiar idea that identity is a causal notion, and the identity of a person requires a certain causal unity. The way a person is at a later time causally depends, in part, on how that person was earlier. And the activity of a person is affected by the combination of properties that the person has; the various properties of a single person affect his behaviour in combination with one another. But the causal interwovenness of the occurrent and long-standing psychological states of the person seems if anything more fundamental to identity.

If occurrent uses of the first person, "I," are to refer to the same thing as first-person beliefs and desires, there must be some causal relatedness between them. Another, related way in which this interwovenness is fundamental has to do with our sense of the ownership of our occurrent thoughts. What makes my occurrent thoughts mine is not just that they show up in my stream of consciousness. What makes them mine is, in addition, the fact that they are products of my long-standing beliefs and desires, and that the occurrent thinking can affect the underlying states.

I think that the real problem about coherence here appears when we reflect that having the conception of oneself involves having the conception of oneself as a causal unity. Use of the first person in one's talk and thought requires that there be a causal unity, an object, for the term to refer to. The rule fixing the reference of the first person is the familiar token reflexive rule, "Any token of 'I' refers to whoever produced it." In the case of spoken tokens of 'I,' the notion of "the producer of the token" seems relatively straightforward, we have to look for the person who intentionally produced the token, or at any rate, whose motor instructions were responsible for the production of the token. If we really thought that occurrent thoughts in one person's stream of consciousness were being produced by the beliefs and desires of another person, we really would have some uncertainty over how to interpret these uses of the first person. Since the schizophrenic does take himself to be in that situation, he cannot but experience some uncertainty over the interpretation of his own uses of "I." The effect is exacerbated, of course, when the delusions of alien control I have been discussing are combined with delusions of causal power over one's surroundings. It seems to me that by developing this line of inquiry we might understand the comment sometimes made, that the patient loses

his sense of self by losing the boundaries between himself and the world (Bovet and Parnas 1993); this is the root, it seems to me, of the difficulty in interpreting what the schizophrenic says.

5. Level Crossings and the "Space of Reasons"

My discussion so far has focused quite tightly on the explanation of one or two key symptoms of schizophrenia. I want to end with a methodological remark about the broader context into which this discussion fits. Schizophrenia is a disease with a number of stages. In one prototypical pattern, the patient experiences a "loss of felt meaning" in the experienced world. For example, he may see someone making a cup of tea, and be able to describe the process intellectually, but still lack any sense of the significance of the process. The sense of a loss of experienced meaning persists, while a number of puzzling phenomena occur which strike the patient as anomalous, in need of explanation, and possibly connected. There may be an increasing sense of tension: the patient has a sense of imminence, of impending meaning, and of inevitability. Finally, there is the onset of full schizophrenic delusions: auditory hallucinations, voices in the head, thought insertion, and so on. The onset of delusions is accompanied by a return of the experience of felt meaning. Meaning has returned to the world, but it is a different kind of meaning (for a rich set of examples, cf. Bovet and Parnas 1993).

There are two different models you might have for this kind of psychological transition. Let me illustrate them both using much more mundane cases. Here is one. Suppose you have known Sam for years. You know he has strengths and weaknesses, but basically you regard him as a good thing. However, there is a sequence of events which lead you to see him in a different light. You see him in a quarrel. You suddenly see in a new light some offensive remarks of his which you had previously been inclined to disregard. As a result of this shift, he goes on to your list of those whose calls you do not return. There is a psychological sequence here, and each stage in the sequence causally explains the next stage in the sequence. You can explain your train of thought to someone else, and they may even come to share your revised view of Sam, though you may not regard it as compulsory that they do so.

Here is another analogy. Suppose you consider the onset of flu. Flu has characteristic phenomenology of its own. The doctor who hears you

describe how you feel in the early stages may know what is likely to be coming next. So you have the initial lassitude, the tickle in the throat, and so on. This is followed by the feverish burning in the forehead, the sense of ache and physical weakness, and all that. So there is again a sequence of psychological states here. But in contrast to the previous model, we would not think of each stage in the sequence as causally explaining the next stage in the sequence. There is a causal sequence here, but what happens at the phenomenological level is simply an epiphenomenon of the physiology, as the flu virus goes about its business.

A simple way to see the sharp contrast between this and the previous case is to remark that since, in the case of Sam, the psychological sequence is a causal-explanatory sequence, it makes sense for someone to try to affect your revised view of Sam by intervening in the causal-explanatory sequence. Someone could try to talk you out of your negative view of Sam. In contrast, in the case of influenza, although there is a phenomenological progression, it is not a causal-explanatory progression. So there is no prospect of cognitive therapy here; the doctor cannot hope to talk you out of your symptoms. Intervention would have to address the underlying physical causes.

One key question about schizophrenia is which, if either, of these models of the progression of the disease is correct. On the one hand, no one has ever been cured of the disease by analysis or therapy, so you might say that this confirms the idea that the phenomenology is epiphenomenal. On the other hand, it is also true that no-one has ever been cured of the disease at all, so the evidence on this point is at best inconclusive.

You would have thought that the philosophical literature ought to offer some guidance on how to draw the distinction between a psychological sequence which is a causal-explanatory sequence, and a psychological sequence which is merely the epiphenomenon of an underlying physiological progression. But it is striking how little help we find.

One powerful idea is that we can appeal to psychological properties as causal-explanatory properties when they have a certain counterfactual force; this is in effect the Jackson-Pettit conception of "programme explanation." The idea is this. Suppose that in every nearby possible world in which someone has certain psychological properties X, the physical realisation of these psychological properties is, though different in each world, always such that one way or another, it is nomically connected to

some subsequent physical state which, one way or another, realises psychological state Y. So in nearby worlds in which the subject still has psychological properties X, the subject still has psychological properties Y; and in nearby worlds in which the subject does not have psychological properties X, he does not have psychological properties Y. In that case, on this theory, possession of psychological properties X provides a high-level causal explanation of possession of psychological properties Y. The problem with this theory is that it makes the early phenomenology of influenza causally explanatory of the later phenomenology of influenza. If the early phenomenology of influenza is genuinely diagnostic of flu, then the counterfactuals will hold. If the subject has the early phenomenology, he will have the later phenomenology, and if he didn't have the earlier phenomenology, he wouldn't have the later phenomenology. But that is the wrong answer.

The rival view is that rationality of the progression is the key factor. The change in my view of Sam is, putatively at least, a rational progression, whereas the development of flu is not. One sharp problem for this view is to explain how it meshes with the idea that causation is fundamentally a matter of physical law; the desire to explain that mesh was the principal motivation for the "programme explanation" view. But even setting that aside, there are two further problems with the view. One is that it suggests that the causal-explanatory relations among psychological states are all relations between propositional states. This idea is what drives the notion of a "space of reasons." The idea is that this is a "space" insulated from any other causal-explanatory relations. The first problem for this idea is that in a way, as we have seen, there are many causal-explanatory relations between sub-personal cognitive states and propositional states; in particular, we have seen that occurrent thinking can be viewed as being regulated by sub-personal cognitive states. So the notion of an insulated "space of reasons" cannot be sustained. The second problem is that the notion of "rationality" simply will not take the weight that is being put on it here. Is the schizophrenic to count as rational? Certainly the patient is not the first example that sprang to mind when Davidson introduced the notion of rationality as a constitutive ideal. I have heard orthodox Davidsonians—though not, of course, Davidson himself—argue that since the schizophrenic is not rational, he does not possess proposi-

tional attitudes. This radical marginalisation is not a position you can take seriously.

John Campbell

New College
Oxford

ACKNOWLEDGEMENTS

Thanks to Gemma Calvert, George Davie, Jeffrey Gray, Louis Sass and Sean Spence; thanks also to Joëlle Proust for a very helpful set of comments. My principal debts are to Josef Parnas and Christopher Frith for generous and forbearing discussions. This paper began during tenure of a British Academy Research Readership, and I am grateful to the Academy for its support.

BIBLIOGRAPHY

Bovet, Pierre and Josef Parnas. 1993. "Schizophrenic Delusions: A Phenomenological Approach." *Schizophrenia Bulletin*, 19: 579–597.

Daprati, El, N. Franck, N. Georgieff, J. Proust, E. Pacherie, J. Dalery and M. Jeannerod. "Looking for the Agent: An Investigation into Consciousness of Action and Self-Consciousness in Schizophrenic Patients." *Cognition*, 65: 71–86.

Feinberg, Irwin. 1978. "Efference Copy and Corollary Discharge: Implications for Thinking and its Disorders." *Schizophrenia Bulletin*, 4: 636–640.

Frith, Christopher D. 1992. *The Cognitive Neuropsychology of Schizophrenia* (Hillsdale, NJ: Erlbaum).

Held, R. 1961. "Exposure-History as a Factor in Maintaining Stability of Perception and Coordination." *Journal of Nervous and Mental Diseases*, 132: 26–32.

Held, R. and A. Hein. 1963. "Movement-Produced Stimulation of the Development of Visually-Guided Behaviour." *Journal of Comparative physiological Psychology*, 56: 872-876.

Jeannerod, Marc. 1997. *The Cognitive Neuropsychology of Action.* (Oxford: Blackwells).

_____. In press. "Beyond Consciousness of External Reality: A 'Who' System for Consciousness of Action and Self-Consciousness." *Consciousness and Cognition.*

Hallucinations Emerge From an Imbalance of Self-Monitoring and Reality Modelling

1. Introduction

Hallucinations are among the most impressive of psychopathological symptoms and may appear in all the sensory modalities. They are the most common symptom in schizophrenia, where patients usually experience auditory hallucinations,[1] often hearing voices which speak to them in direct communication or in the form of running commentary. One of the major research strategies in psychopathology during the last years has become the neuropsychological reconstruction of psychopathological symptoms in order to detect basic "core" deficits of the different symptoms. Given the successful identification of such core deficits, they may then serve as heuristic tools to identify candidate brain regions of putative pathology. These brain sites in turn can be explored with respect to their impact for the pathogenesis of schizophrenia.[2] Among these neuropsychological approaches, one of the most prominent concepts reconstructing schizophrenic symptomatology is the concept of a self-monitoring disturbance, based on the conceptual and empirical work of the group around Christopher Frith.[7] Although this conceptualization is evidence-based and appears plausible, it does not fully explain the high degree of certainty or confidence with which schizophrenic patients usually judge the reality status of their hallucinations and the frequency with which the latter might occur. The concept of self-monitoring disturbance thus provides a necessary but not a sufficient theoretical account of how hallucinations are generated.

It is proposed that normal perception, imagination and hallucination can be integrated in a perceptual continuum. This perceptual continuum is reconstructed as a representational system in which the perceiving person is embedded in his/her environment. Incorporating the characteristic hal-

"Hallucinations Emerge from an Imbalace of Self Monitoring and Reality Modelling" by Kai Vogeley, *The Monist*, vol. 82, no. 4, pp. 626–644.