The Grammar of Neuroscience: What can and cannot be said about brains and minds

Kirsten Dierolf MA PCC and Mark McKergow PhD MBA

While we are encouraged by the appearance of articles about neuroscience which support SF practice, we urge caution in interpreting these findings on three grounds. The different grammars of neuroscience (molecular grammar) and SF practice (people grammar) are not transposable, and according to Wittgenstein one cannot be reduced to the other. There is a risk of falling for the mereological fallacy – applying to a part (a brain) something which can only be applied to a whole (a person). Finally, the fundamentally social aspect of language calls into question our everyday assumptions about the links between mind, brain and language. Wittgenstein and others offer a way to say what can be said clearly, and to be as unmuddled as possible in our investigations and discussions.

Introduction

The latest results from brain research are fascinating and encouraging for SF practice. Observations like

"Is the answer to all the challenges of change just to focus people on solutions instead of problems, let them come to their own answers and keep them focused on their insights? Apparently, that's what the brain wants." (Rock and Schwartz, 2006, p. 6)

seem to add credence to SF practice as an effective and efficient way of moving forwards.

In his book "Neuropsychotherapie", Klaus Grawe (2004) describes a form of therapy which is based on neuropsychological research. His conclusions on what constitutes a most "brain-friendly" or efficient form of therapy which utilises the neuronal mechanisms bear close resemblance to what SF practitioners do when they conduct therapy or coaching sessions. For example, he stresses the positive relationship with the client, using the client's words, giving authentic

compliments, working on the goals of the client, concentrating on the positive aspects of the client's life etc.

Yet how are we to interpret and make use of these findings in our work? And in particular how can we view statements about the brain in view of the SF position on simplicity and not confusing the inner and the outer. How can we assess and value the findings of neuroscience? And does it have anything to offer which may enhance the practice of SF or make it easier? This article will examine what can usefully be said (or not) about the brain by SF practitioners from the perspective of Wittgenstein, discursive psychology and the interactional view.

Molecules and meanings

SF is a practice broadly associated with social construction and the interactional ideas of the 'second cognitive revolution' (Harré, as cited in in Smith, Harré and van Langenhove, 1995, p 144). This discursive turn on psychology and science takes the view it would be misleading to see people as 'driven from within' by alleged mental processes, beliefs, values etc. These notions are instead viewed as action-oriented and purposeful. Rather than viewing motivation as some kind of mythical property which, if increased, will increase energy and work rate, it is better viewed as part of a description of someone acting energetically and fast. The motivation does not precede the activity, it is bound up in the activity. A small number of other practices including narrative therapy, constellations work and discursive psychology take a similar view.

This angle is not always fully appreciated by those learning and practising SF. This may be because it would be odd to spend a lot of time discussing what is NOT done rather than what is done, and also because the SF conversations which follow look to be very everyday and mundane, and not at all in need of close examination and analysis.

Discursive psychologist Rom Harré (2004) has said that there are molecules and meanings in the world, and confu-

sion results when things in one domain are mistaken for those in the other. A classic example is a roadside stop sign. We can observe traffic driving up to the sign, stopping and then driving on again. So, the sign can be said to cause drivers to stop. However, it would be a mistake to attempt to investigate this meaning of 'stop' by examining the sign in molecular terms – taking it away to the laboratory to study the precise shades of red paint and molecular structure of the metal from which the sign is constructed. No matter how earnest and detailed the analysis, it would be futile – one would be looking in the wrong place. This would be to mistake a grammar of meaning (co-constructed socially by convention and agreement) with a grammar of molecules.

In neuroscience terms similar confusions are rather frequent. One appeared in Mark's email inbox, from the 'Brain in the News' newsletter. Following the tragic shootings at Virginia Tech in April 2007, the newsletter announced:

"Drawing from Amen Clinics' database of nearly 40,000 brain scans, we scanned forty murderers. They were compared with an age matched healthy group using SPECT imaging, which measures blood patterns in the brain. The study found that the blood flow among murderers in the prefrontal cortex of the brain was significantly decreased. This area of the brain is implicated in anger management and deficits here indicate a relative inability to utilize resources involved with inhibition, self-censorship, planning, and future consequences."

Leaving aside the question of how many non-murderers showed similar patterns, this extract shows an explanation in molecular grammar being used to connect to a meaning-based worldly phenomenon. We propose that such statements be treated with great care, as it involves an explanation connecting the molecular and social realms.

Explanations are dubious

Steven Rose (1997), in his book Lifelines, gives an excellent example of how difficult it can be to produce the 'right'

explanation for a simple action. He discussed the case of a frog which is observed to jump into a pond on the approach of a predatory snake, postulating a group of five scientists who each offer their own explanation:

- The physiologist says it's because the muscles in the frog's legs contract, following nerve impulses from the frog's brain.
- The animal behaviour scientist says it's because the frog wants to avoid the snake, and is pursuing a goal.
- The developmental biologist explains that the way the muscles and brain have become 'wired up' during its life make these jumping actions happen when danger approaches.
- An evolutionary biologist says it's the result of adaptations during history, when the frog's ancestors were selected by their ability to escape from snakes.
- The molecular biologist steps up and, smiling sweetly, says that the other four are all wrong. The frog jumps because of the biochemical properties of its muscles.

These explanations operate at various 'levels' from basic molecules up to behaviour of the creature in context, and none excludes the others, so you cannot say which is the "right" or "wrong" explanation for any phenomenon. You can only ask whether the explanation provided is useful for understanding the subject at hand with the given focus.

For example, we asked some workshop participants to "find explanations for what happens, when someone asks the miracle question". There were many answers on many different levels of explanation:

Explanations of therapeutic process

- The miracle question is an elaboration of positive goals
- The miracle question is a conversational process – someone is listening.

Neurological explanations

- When the miracle question is asked there is an activation of the left pre-frontal cortex
- The client taps into the right hemisphere of his or her brain
- The co-operation of the two hemisphere is increased
- The brain is helped in it's function
- There is a stimulation of the brain to form a new neuronal structure.

Emotional explanation

- The client is engaging in positive feelings
- People become animated as they imagine themselves in a better place
- The client relaxes.

Physical explanations

- The client's body is releasing hormones
- There is diminished blood pressure
- The client relaxes
- Mind and body are connected through language.

Temporal /Attention Focus explanations

- The client is travelling in time
- Future and past are combined
- There is an awareness that there is a positive future
- Because it is an a-logical question it interrupts logical thought and thereby widens the field of attention
- It works with the third reality, the possibility.

Self-perception explanations

- The client is the actor
- The client rehearses future actions.

NLP explanations

- The eyes move to the left, so the client is inventing new pictures of solutions.

Hypnotic explanations

- It is a positive future trance.

Philosophical explanations

- A new map is created for an old landscape (taking a metaphor from Korzybski, 1920).

Which is the 'right' explanation? It depends what you're trying to do, what you are trying to understand, and in which (scientific) context you are operating. All of these versions have a potential place in some kind of endeavour.

Steve de Shazer (1998 as cited in Jackson & McKergow 2007 p. 103) once wrote that

'I think theories, at best, are useless... Among other things, a Theory offers explanations, when explanations are dubious and are not connected to solutions.'

Explanations – whether they seek a general truth or are focused on a particular incident – are usually focused on explaining what happened in the past and therefore looking for some certainty or probability of what may happen in the future. In an SF context and in SF practice we are concerned with solutions – what is wanted – which may have little or no connection with the past. Indeed in therapeutic circles the contrast between the problematic past and the better future may be stark. Explanations which support the problematic past or portray the problematic present as a corollary of the problematic present may simply make it more difficult to notice change or to believe that, indeed, change is possible.

People grammar for people talk

Our observations of SF in practice in many contexts and over many years suggest that the key grammar at work in SF practice, or in any practice aiming at change in a person, is what Rom Harré (2002) would call 'person grammar'. This is characterised by 'treating embodied persons as the basic particulars and originating sources of activity'. This is very much an everyday form of language, where named and

individual people do things together and separately. People think, remember, hope and act – they are not driven by their thoughts, memories, hopes and actions. Surprisingly, this is not always the way in which behaviour is discussed, as we will see below.

Sometimes, what we would describe as an act of a person (she is remembering something), is described in "molecule grammar" instead (the prefrontal cortex is producing affective memories). Molecule grammar is a splendid way to examine brain tumours and chemical balances. Such scientific language is also highly powerful, and it would be good to view the people able to use this kind of language as specialists who know what they are talking about and should be given respect. We propose that leaping directly from molecule grammar to people grammar like in this text:

"As modern cognitive psychobiology shows, the brain creates an internal representation of the perceived world; neurobiology in turn showed that these representations can be explained on the level of individual nerve cells and their connections. The convergence of these disciplines offered entirely new insights into the phenomena of perception, learning, and memory" (Kandel, 1996, p.713) (K. Dierolf, Trans.) is to court confusion.

Can we say that a brain thinks?

A great deal of neuroscience is written about the brain as if it were a conscious entity. At first glance this may seem reasonable, but let us take a closer look. Bennett and Hacker (2003) have examined the philosophical foundations of neuroscience and discovered some disquieting tendencies:

"Human beings possess a wide range of psychological powers, which are exercised in the circumstances of life, when we perceive, and think and reason, feel emotions, want things, form plans and make decisions. The possession and exercise of such powers define us as the kinds of animals we are. We may inquire into the neural conditions and concomitants for their possessions and exercise. This is the task of

neuroscience, which is discovering more and more about them. But its discoveries in no way affect the conceptual truth that these powers and their exercise in perception, thought and feeling are attributes of human beings, not of their parts – in particular, not of their brains. A human being is a psychophysical unity, an animal that can perceive, act intentionally, reason and feel emotions, a language-using animal that is not merely conscious, but also self-conscious – not a brain embedded in the skull of a body." Bennett and Hacker (p.3).

Bennett and Hacker (2003) claim that neuroscientists and others who say that (for example) the brain visualises or that neurons learn are committing the mereological fallacy. The term mereology relates to the study of wholes and parts – the relation of part to whole and part to part within a whole. The mereological fallacy is to ascribe to a part something which should only be ascribed to a whole – in this case ascribing to a brain something that should only be ascribed to a person. Bennett and Hacker (2003) go on to clarify this:

"The brain and its activities make it possible for us – not for it – to perceive and think, to feel emotions, and form and pursue projects." (p.3).

Hacker, a leading Wittgenstein scholar, is taking his lead here from Wittgenstein himself. In the Philosophical Investigations we find:

"Only of a human being and what resembles and behaves like a living human being can one say: it has sensations; it sees, is blind; it hears, is deaf; is conscious or unconscious." (Wittgenstein, 1958, p. 281).

If you're at all like us, you'll be trying to think of counter examples already. Can't we say that our foot hurts or that our head is hot? Yes, of course we can. Bennett and Hacker (2003) go on to say that:

"It should be noted that there are many predicates that can apply both to a given whole (in particular a human being) and to its parts, and whose application to the one may be inferred from its application to the other. A man may be sunburned, and his face may be sunburned; he may be cold

all over, so his hands will be cold too. Similarly, we sometimes extend the application of a predicate from human being to parts of the human body; for example, we say that a man gripped the handle, and also that his hand gripped the handle; that he slipped, and that his foot slipped. Here there is nothing logically awry. But psychological predicates apply paradigmatically to the human being (or animal) as a whole and not to the body and its parts. There are a few exceptions, such as the application of forms of sensations like 'to hurt' to part of the body; for example, 'My hand hurts', 'You are hurting my hand'. But the range of psychological predicates that are concerned – that is those that have been invoked by neuroscientists, psychologists and cognitive scientists in their endeavour to explain human capacities in their exercise – have no literal application to parts of the body. In particular they have no intelligible application to the brain." Bennett and Hacker (p. 73–74).

Where is language – in the brain or in the world?

Acclaimed psychologist Steven Pinker has promoted Jerry Fodor's idea that we all think in some kind of 'mentalese' language, which is akin to the machine code of a computer. Wittgenstein's view, on the other hand, was that any kind of private language is impossible, and that language is by nature a public phenomenon. This connects with the role of mind (as opposed to brain) in philosophy and in SF work, with more and more people coming to the Wittgensteinian conclusion that mind cannot be equated with brain, or even be placed inside the head (for example Brothers, 2001).

The idea of Pinker seems to have some validity. It sometimes seems that thinking is an inner process, and that therefore language is produced from within us. However, closer scrutiny reveals that both of these ideas are flawed. Wittgenstein (1974) points out that:

"In the consideration of our problems one of the most dangerous ideas is that we think with, or in, our heads. The idea of a process in the head, in a completely enclosed space,

makes thinking something occult... It is a travesty of the truth to say 'Thinking is an activity of our mind, as writing is the hand'." (p. 106).

It makes sense to say 'I am thinking, don't disturb me', but not 'My brain is thinking, don't disturb it'. It makes sense to say 'Wait a moment and I'll tell you' but not 'Wait a moment and my brain will tell me, and then I'll tell you'. (Hacker, 1993 p. 74).

What is the content of a brain?

We casually speak of brains as having knowledge stored within them. Again, this idea is challenged upon closer examination.

"Hence, too, like Cartesianism, contemporary neuroscience conceives of mental events, states and processes as occurring, or pertaining or going on in a human being – in particular, in his brain – rather than conceiving of mental states as states of the person, of mental acts or activities as acts and activity of the human being, and of mental processes of processes undergone, gone through or engaged in by a person." Bennett and Hacker (2003, p. 112).

Leslie Brothers (1997) goes further and examines the way in which meaning are created – not within a brain or a person but by interaction:

"Similarly, to bridge the gap between minds and brains, we must grasp the significance of observations already available to us. We take the first step by acknowledging that the networks of meanings we call culture arises from the joint activities of human brains. This network forms the living content of the mind, so that the mind is communal in its very nature: It cannot be derived from any single mind in isolation." (p. xii).

Language is social

There is a great deal of evidence that language is learned interactionally – by being exposed to it and using it in a

natural context. The fascinating cases of 'feral children' support this point. In such (thankfully rare) cases children have been separated not just from their parents but from all forms of human contact. They have lived with animals and develop distinctive and surprising ways to get along within these extraordinary contexts. However, when these children are eventually returned to human society they do not learn whole languages in the adult sense. They can communicate in simple terms, but not with the full range of abstract cognition shown by conventionally socialised people. The lack of interaction and language in use at key ages (typically related as up to seven years old) seems to permanently stunt the development of rich and normal language.

James Kennedy, in his book *Swarm Intelligence*, develops this idea:

"… we are developing a perspective of the individual mind embedded inextricably in its social context. But it is hard to establish what exactly is meant by mind. It is a word with no definition, because all attempts to define it are necessarily circular. The existence of mind is self-evident and only self-evident, known only by direct experience of one's own mind and inference of other people's – or is it through inference that we know our own minds, too?" Kennedy, Eberhart & Shi, 2001, p. 187).

Kennedy comes down alongside Wittgenstein, Brothers and Hacker on the side of socially constructed mind.

"In short, and in order to provoke thought and discussion, we would argue that unsocialized humans do not have what we normally think of as minds. They cannot think or communicate, and their learning is restricted to the kind of individual experience that omits the accumulation of knowledge through culture. Thus we would not conclude that culture 'strengthens' the mind or 'helps' the mind but that it 'creates' the mind." (Kennedy et al.,2001, p. 258).

Begin with life and stay there

In SF practice we avoid talking about abstractions, feelings, emotions as separated from the everyday events in which they naturally occur. This article has shown many routes of support for such a stance, from the potential confusion over molecules and meaning, the mereological fallacy and the pitfall of viewing language and mind as somehow wholly implicated with brain. We close with a quote from Wittgenstein scholar Daniele Moyal-Sharrock:

"Human beings have not only a language and convention, they have language and convention rooted and enacted in a natural context. … Any attempt to retrace the fundaments of our culture, our thoughts and language, must start with our life; not with some ghostly, implicit grammar or pseudo-language stored in our brain and waiting to emerge from the inner to the outer, from the unvoiced to the voiced, from 'universal deep structures' to regional, open 'superficial variations' (Pinker 1994, 7, 411). To Fodor's 'one cannot learn a language unless one has a language' (1975, 64) one is tempted to reply: 'Get a life!' (Moyal-Sharrock 2005 p. 11).

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Kirsten Dierolf M.A. PCC works as an executive coach and training and development consultant mainly for global corporations. info@solutionsacademy.com.
Mark McKergow is co-director of sfwork, the Centre for Solutions Focus at Work. mark@sfwork.com.