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# 'Me talk funny': A stroke patient's personal account

JÜRIG R. SCHWYTER

A personal account from a multilingual linguist in recovery

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## My stroke

If you met me and listened to me speaking English, you might ask yourself why I talk so funny; why I can't find the right words; and why I make so many grammatical errors. I am, after all, the Professor of English Linguistics at the University of Lausanne in Switzerland, and I have degrees in English language and linguistics from Cambridge University and the University of Pennsylvania.

The answer, sadly, lies in my brain. A little more than two years ago, when I was 45 years old, I had a stroke. After about 36 hours of lying helpless on the floor of my flat in Lausanne, I was rescued, thanks to the perseverance of my sister, who intervened from near Zurich – though natively Swiss German-speaking like myself, her fluent telephone French was in the end enough to persuade the Lausanne police to break my door down and find out why I was not answering my phone.

Now, as a result, I suffer, among other things, from aphasia. Aphasia is rather a broad term. It can range from describing people who don't seem to find quite the right word, to people who basically talk meaninglessly, and to people who labour to say anything at all. Aphasia is caused by damage to the left hemisphere of the brain, and this is what had happened to me. That language is a left-hemisphere phenomenon, and the location of language competence, is confirmed by the numbers of individuals who have brain injuries. About 70% of those with left-hemisphere injuries experience aphasia, whereas of those with right-hemisphere injuries, it is only about 1% who experience language difficulties. In 1861, a French researcher named Paul Broca defined what has come to be known as Broca's area of the brain, the frontal lobe in the left cerebral hemisphere. Broca produced this finding on the basis of a patient who had difficulty articulating speech.

Broca's area is one of the principal motor speech areas. Injuries in this region will affect your speech output greatly, and usually cause a severe speech impediment.

This discovery was followed in 1874 by the German Carl Wernicke, who investigated patients with lesions in the left hemisphere outside Broca's area. He found that these patients had comprehension difficulties, although they basically could speak fluently: they had no difficulties finding words or speaking in grammatically-correct sentences; it was the understanding that was missing. Patients with Wernicke's aphasia have the problem that while their pronunciation is perfectly all right and their prosody is intact, they just don't make any sense. In a question and answer session, for example, the patient simply does not understand any of the questions, so seemingly replies at random, though all their sentences are perfectly grammatical and well-formed.

In my own case, there is no damage in Wernicke's area. I can read perfectly well in all



*JÜRIG SCHWYTER used to be Head of the English Department in the University of Lausanne before he suffered a severe brain stroke in February 2009. After two years, he has gained the ability to walk again and to speak English and Swiss German (though not the many other languages he used to speak), but his right arm is still partially paralysed. He writes with the Dragon 10.1 speech recognition programme and works at the University at 20%. He continues to recover.*

*Email: JurgRainer.Schwyster@unil.ch*

the languages I know – English, German, Italian and French – and I can also readily *understand* these languages. But speaking them is a very different matter – it is damage to Broca’s area that is my problem. Two years after my accident, with the help of expert speech therapy, I have managed to overcome this problem to the extent that I have regained rather good oral competence in my mother tongue, Swiss German, and in my main professional language, English. But it has been a slow and difficult process. This mismatch between speaking and comprehension is perfectly logical given that active and passive language knowledge are located in two quite separate regions of the brain.

## My aphasia

My aphasia, then, is Broca’s aphasia. Initially it was rather drastic, and I was originally totally mute for a brief period (this, together with comprehension difficulties, is ‘global aphasia’). And it is still true – distressingly though fascinatingly – that I cannot produce coherent utterances in French, although I live in a French-speaking area and work at a French-speaking university, nor in Italian. Neither, perhaps most surprisingly, can I speak coherently in Standard German, the very first language, apart from my mother tongue, which I ever learnt, starting at school at the age of 7. However, months of tough speech therapy training have made all the difference to my other two languages, since I have been fortunate enough to have a bilingual Swiss German/English speech therapist who, as early as May 2009, introduced English speech therapy into my treatment.

In Broca’s aphasia, there can be confusion between phonemes, so getting the phonology right was a matter of target practice of distinctive features, e.g. /t/ versus /θ/ as in the distinction between *wit* and *with*. Very often this goes wrong and the target, from a German speaker’s point of view, is missed. In the first month of rehabilitation, I was also trained to learn to produce the differences in English between /s/ and /ʃ/, between /t/ and /θ/, between /r/ and /l/, and so on. Initially, I had a rather strong Swiss German accent in my English, but in time I was able to return to the (so my British friends tell me) near-RP accent which I had before. There were similar pronunciation exercises for Swiss German. And there was one other thing we had to work on: Broca’s patients may suffer from a total lack of prosodic features such as stress, rhythm and intonation, so they sound like a robot when they speak – which

I did. It would be tempting to think that these pronunciation problems are somehow related to the physical paralysis of the speech apparatus – in my case the right side of my face and mouth – and this may actually be part of the explanation. However, even people with no apparent physical paralysis still find it extremely hard to construct sentences, so there is no doubt that the main problem is damage to the Broca’s area of the brain, which has very language-specific tasks.

It is also typical of Broca patients that they suffer from a syntactic disorder – faulty sentence structure – if in my case only slightly in both languages. I used a sort of telegraphic speech in which all the function words were omitted – even now I can, for example, omit an *is*, *it* or a *have*. One explanation for this might be that it is a great deal more economical and much less of an effort to speak without function words. Function words do not take affixes (like nouns, verbs and adjectives do) and are never truly stressed, so they are ‘less important’ and can just be left out as one would do in telegrams or newspaper headlines. However, it might be that the explanation lies at a deeper level of syntax. Agrammatical sentences may have something to do, for instance, with processing the hierarchical ordering of grammatical constituents.<sup>1</sup> And there is something else Broca patients suffer from. What we all share is a deep and horrible awareness of our linguistic shortcomings – and we are terribly frustrated by this. We have a total understanding of exactly what we want to say, but we just cannot manage to say it.

## Brain plasticity

As far as my recovery is concerned, one intriguing question is this: after a stroke, the damaged areas of the brain are all dead – and remain so. So how is it that I can now actually speak at all? The answer lies in how the brain is constructed. The left and right hemispheres are linked to each other by a whole network of connections. So the lesion caused by the stroke can be taken over by neural networks in other areas that were originally *not* primarily concerned with language. This is what all that training I have been through, and all the efforts I have had to make, have resulted in. I have been able to retrieve two of my languages, English and Swiss German, by getting new areas of my brain to take over the work associated with these languages. Presumably this has not yet happened in the case of my other languages.

There is also something rather special about me which helps to explain why I was able to regain

some of my speech relatively rapidly: I am left-handed! It is true that in my rather backward elementary school I was retrained to write with my right hand, but in spite of that I have always automatically performed very many other activities with the left hand, such as drawing, underlining, opening doors, switching on lights, and so on. This makes my whole cerebral system even more complex. Contrary to what might be expected, the brains of left-handed people are not just a mirror image of the brains of right-handers, with language being concentrated in the right hemisphere rather than the left. Instead, they show strong language activity in *both* hemispheres. Left-handers therefore have less brain lateralization than right-handers – and that probably gave me an advantage in saving part of my language abilities. And, while having a stroke in my 40s was a devastating thing to happen, the fact that I was rather young has almost certainly also helped as well. There is some understanding of why this is. It is necessary for the left and the right hemispheres of the brain to communicate with one another in order for speech to function normally: it is no longer thought that the left hemisphere is totally superior to the right. New research technologies have provided insights into the fact that holistic processing can be linked with speech and writing, as well as with recognition of melodies, analytical processing, and so on. The current view is that it is more accurate to refer to the hemispheres as complementarily specialized.

The degree of hemispheric specialization is different from individual to individual; and right-handers show greatest hemispheric specialization whereas left-handers show the least. Researchers have also found in split-brain research (that is, where one half of the brain is severed from the other) that the right hemisphere can actually understand the basics of oral as well as written language; but this linguistic competence is really minimal and basically restricted to single words. However, with people who sustain left-hemisphere injuries very early in life, it is not uncommon for them to show right-hemisphere language dominance. Crucially, this adaptability decreases in later life, so that after puberty the danger of sustained aphasia is much greater. Recent research has shown that the brain plasticity which has enabled me to regain my active command of Swiss German and English operates at two levels – the micro level (cellular) and the macro level (behavioural): the brain can learn new behaviour, and behaviours can alter the brain. So, the structure of the brain allows plastic changes to take place, which allows, in turn, recovery to occur.

This may evolve over several months or even years, as brain plasticity sets in and the functions of a lesion (primary changes) are slowly taken over by a new organization in the brain (secondary changes). This finding has been confirmed by one researcher who observed bilateral language activation in reading and speaking tasks in recovered patients, which may indicate a degree of involvement of the right hemisphere in some elementary and basic language functions.

So for me it is encouraging that a slow process of compensation seems entirely possible – although the right hemisphere will probably never have quite the same capacity for language specialization that the left one has. Not everybody who has suffered a stroke will have a left hemisphere which is totally ‘out of action’; the extent to which this is so will obviously be directly related to the degree of severity of the aphasia. In cases of less than complete destruction, part or even total compensation and thus recovery of language ability is entirely possible. The only thing which is needed is speech therapy and training. And training. And then more training.

### **Conclusion: how to live with a stroke**

Living with a stroke is not easy. It is very tough when one is ignored or belittled, and aphasia can have serious implications for interpersonal relationships on all levels. The uninitiated general public may regard you either as slightly retarded, with, for example, a waiter impatiently waiting for your menu choices while you are struggling to find and utter the right words, or as obstinate and non-cooperative when a telephone cold-caller wants to sell you something and all you can answer is ‘no’, ‘no’ and ‘no’ again, because it is too much of an effort to respond otherwise. Of course, not everybody falls into these categories; people may be helpful and concerned – especially if they know what is wrong with you. However, it may definitely help if you have the following strategies ready:

- always say that you have a speech impediment which has nothing to do with your intelligence or willingness to cooperate;
- demand your right to speak, even when the topic of conversation has already shifted and you may be a bit late; and
- when shopping, for example, have a written list of the things you want to buy, so that you are not ‘mute’ or struggling for words when the shop assistant asks you what you would like.

It takes some practice and, frankly, quite a bit of overcoming your inhibitions for these suggestions to work, but once you have achieved this, it will definitely ease your life considerably. You will be free of pressure, for it is to a large degree pressure, and the 'fear' of performing in front of strangers, that makes you totally mute, and you will then have all the time in the world. These strategies may be especially important if you are at a meeting.

Reflecting on my time since the day of my accident, it has taken me about one year of solid therapy and practice to fully regain my spoken Swiss German and my English. My reading abilities have not been affected, as I said. But my writing abilities continue to pose a challenge – I continue to mis-spell many words, especially when I am tired or excited. I am especially prone to omit the middles of words, too, so that *excitable* can be written as *excible*, for instance. Sociolinguistically, there are also problems. Because I am still not competent in spoken Standard German, I tend to speak Swiss German in situations where other Swiss people would speak Standard German. Swiss Germans always speak Swiss German amongst themselves, but we always speak Standard German to Germans and Austrians. I find I can't do that, which is not too much of a problem with people from southern Germany and Austria, who can often understand what I am saying, but it does not work at all well with northern Germans. We would also always, for example, give conference presentations in Standard German, but at the moment I am afraid that would be beyond me.

And there are also considerable professional difficulties to deal with. I have been able to work part-time and team-teach a seminar on sociolinguistics – although I really struggle if I try to imitate different English accents! And a formal lecture course would be impossible for me, because one needs the stamina to keep speaking for one hour – something I cannot do. My (partly) paralysed limbs are also an enormous problem – initially my whole right side was paralysed – but that is another matter.<sup>2</sup>

What this essay has really been about is how language is created by the brain, how easily it is therefore affected by a stroke, and how difficult it

is to repair the damage. In order to carry out a repair, you need a good speech therapist, a lot of training, considerable willpower and, above all, a supportive environment. Please remember that we people who have had strokes have got something to say, but that we just can't express our thoughts and ideas, and that this is immensely frustrating. ■

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### Notes

1 See for example the introductory 'Linguistic theory and aphasia' in Gary Libben, *Contemporary Linguistics*, ed. William O'Grady et al. (1996, 3rd ed.), pp. 431–4, or the much more advanced, Herman Kolk and Claus Heeschen, 'Adaption symptoms and impairment symptoms in Broca's aphasia', *Aphasiology*, 1990, 4(3), 221–31.

2 Due to partial paralysis of my right arm, this text was dictated using a speech recognition program, *Dragon Naturally Speaking* 10.1, and then was automatically typed into the file.

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