

APHASIA AND INNER LANGUAGE

In memory of my friend Henry Hécaen

To be able to read a precise and elaborate self-observation by someone who suffered for an extended period of time from that language affliction that has been called *aphasia* for more than one hundred years is such an extremely unusual occurrence that one would think such a work would attract the attention of all those persons, whether specialists or enlightened amateurs, interested in questions of language and in its eventual pathological aspects.

Moreover, as a first-person narrative, the precious document is all the more infrequent in that it presupposes several conditions that do not often coincide. This can only occur if the subject has recovered, or at least improved sufficiently to have regained adequate powers of self-observation, of remembrance and of writing skills. For such to be the case this generally chronic disorder must be relatively short-lived and there must be a *restitutio ad integram* of introspection, of memory and the ability to formulate it in writing.

Translated by R. Scott Walker

When P. Broca, from 1861 to 1865, for the first time published a certain number of observations of subjects who had been deprived of oral expression even though they had spoken perfectly well previously, an affliction linked to the destruction of the base of the third frontal circumvolution, on the left in a right-handed subject, he proposed the term *aphemia* for the disorder, based on the privative alpha and the verb *φημί*, “to speak”. But Trouseau, noting that in modern Greek *aphemia* signifies “bad reputation”, suggested another neologism, *aphasia*, which gradually took its place in international scientific vocabulary (again the privative alpha and *φάσις*, “word”).

In 1914, J. Dejerine defined it as follows: “Aphasia is the loss of one or more modalities of language and of mechanisms for reception or exteriorisation of words” (1977, 1, 74). To these semi-otic indications he added the following anatomical details. “In the final analysis, aphasia can be defined as any functional disorder at any point of the language zone or of the fibers that link it to the nearby general sensorial or motor centers” (1977, 1, 75). Seventy years later, with H. Hécaen, we said the same thing: “A disorder affecting the emission or reception of verbal signs, occurring with no affliction of peripheral instruments, in connection with a localised and circumscribed cerebral lesion and in a subject whose use of words previously had been normal” (1983, 27-28).

However, it is quite important to grasp something of the intimate experience of the aphasiac, that is of the manner in which he feels, imagines and perhaps explains to himself this aspect of his existence, modified by this type of language disorder. But in order to profit from such personal information, we must first recall a certain number of facts concerning the principal aporias of this question, the very notion of internal language, the value and the danger of several analogies, and finally the relationships between language and thought.

1. APORIAS OF THE PROBLEM OF APHASIA

From the beginning of our knowledge in this realm, that is between the years 1861-65, when P. Broca developed his concep-

tions based on a wealth of anatomoclinical observations, and the year 1874, when C. Wernicke extended the field with definition of sensorial aphasia and aphasia of conduction, heated controversies arose. The discoveries of P. Broca seemed to put an end to the ancient quarrel between localisers and unitarians, with the former conceiving the functioning of the cerebral cortex as the result of a sort of federation of specific cortical territories in which a precise anatomical structure and a physiological function could be determined, and the latter maintaining that the cortex functions as a whole, recalling the motto of German Romanticism, *im Ganzheit*, or in English, “as a whole”. However, although the discoveries of P. Broca seemed to confirm the localisers, they were a stumbling block to others. Because of the symmetry of the cerebral hemispheres, it was thought that, if there were cortical localisations, they could only be bilateral, whereas aphasia indicated to all that the lesion was unilaterally to the left.

Later, with P. Marie in France, and especially K. Goldstein in Germany and then the United States, the globalist positions, reinforced by *Gestalttheorie*, re-emphasised the notion of totality; by the end of the Twentieth century, with the works of H. Hécaen and J.L. Signoret in France, M.L. Albert in America and A.R. Luria in Russia, there was a much more detailed, and hence localised, anatomophysiological representation. This is the position most commonly accepted in present-day aphasiology, which in no way presumes that the last word has been spoken.

Another question remains unresolved. Is aphasia, whether transitory or lasting, merely a somewhat specialised intellectual disorder, in which case, as P. Marie pointed out in 1906, “It is not only language that is affected in persons suffering from it, but there is a sizeable deficit, especially in the stock of things learned through didactic methods” (1926, 1, 8)? (This was long the opinion of Trousseau.) Or should there be an absolute separation between intellectual disorders, which affect orientation in time and space, evocative and fixative memory and critical judgement, as in demented states, and the specific alterations of language in all its aspects? In the first manner of answering the question, aphasia represents a variety of dementia, generally destined to terminate in a totally demented condition; whereas the second option describes a quite specific disorder that in itself implies no diminish-

ing of intelligence.

It seems quite puerile to us to be surprised that, nearly one hundred years after formulation of these problems, no definitive solution has been found for them, because of two methodological requirements that are difficult to satisfy at the same time. On the one hand, at least since the work of K. Lashley, it has been well known that it is necessary to determine a homogeneous series of uniform anatomoclinical cases in order to be able to prove one position as opposed to another. On the other hand, pure examples, in which one can be certain there are no other lesions, are rare, making it difficult to arrive at the formation of series. Between the too broad generality of well-established series and the too individualist nature of monographs, strict knowledge is formed in whatever manner it can, without providing responses to every question.

2. INNER LANGUAGE IN THE WORK OF J. DEJERINE

Clinical worker and anatomist, J. Dejerine was the most rigorous of localisers and was able to synthesise all knowledge of neurological semiology in a book, the definitive version of which dates to 1914; republished in 1977, the place it still occupies in international bibliographies demonstrates its quality. However, drawing to a very small extent on a work by G. Ballet published in 1886 entitled *Le Langage intérieur et les diverses formes de l'aphasie*, he introduced to aphasiology the question of the integrity or alteration of this inner language.

What did he mean by this expression, somewhat reminiscent of the late Stoics and of Saint Augustine? He explains it as follows: "When we abandon ourselves in the course of our reflections, when, in other words, we engage in 'the act of thinking', we can do so in two quite different manners. Either we think with images of objects or else we think with images of words; and in the latter case we are talking to ourselves, that is we think with our inner language" (1977, 1, 115). He adds, "We think, therefore, with our auditive images and, at the same time that we clearly hear the words sounding in our internal forum, we are somewhat conscious of the movements necessary to pronounce them, with

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the auditive image awakening the corresponding motor image' (1977, 115-116). Inner language thus appears to be the discussion we hold with ourselves, of which we are never sure that the terms "speaking" and "hearing" describe it exactly, even though we hear ourselves talking to ourselves and it is fundamentally a question of language.

Once this idea was clarified, J. Dejerine distinguished two major types of aphasia, depending on whether this inner language remained intact or whether it was afflicted to some extent.

In the first case, which he calls "pure aphasia", inner language is retained. In the "motor variety", the proof of the integrity of this inner language is that "although he cannot pronounce words, the victim has retained the motor images of their articulation. He makes an exhaling effort for as many times as there are syllables or letters as there are in the word; he squeezes a hand as many times as there are syllables or letters in the word. Or again he indicates with his fingers, and quite rapidly, the number of syllables contained in the word he cannot pronounce" (1977, 1, 82). He speaks quite well to himself, but he is unable to move from this intact inner language to an external language. "In short, in this variety of motor aphasia, the only pathological phenomenon consists in the impossibility to articulate sounds in all their modes. But all other modalities of language are intact, and inner language takes place as in a healthy person" (1977, 1, 83).

We can note the symmetry in the "sensorial variety" of pure aphasia. Verbal, oral or written messages are received, for the subject is not deaf; but they cannot be deciphered, either totally or separately for spoken words and for writing. But the patient, if he does not understand what is said to him, speaks normally (pure verbal deafness), and if he does not understand what he attempts to read, writes normally (pure verbal blindness).

In these two varieties, the inner language functions well, and the defect, we might say, affects the encoding machine in the motor variety, or the decoding machine in the sensorial variety.

It is quite another matter in what J. Dejerine calls "cortical aphasia" where the inner language itself is afflicted. In the motor variety, "the problems are clearly much more accentuated for spoken words and written language; *all modalities of language are affected*. Depending on the intensity of this affliction, the

varieties are numerous; but this law is always found: alteration of all modes of language with a predominance in the case of the articulated word” (1977, 1, 81).

In the sensorial variety, of course, reception of the spoken word and of writing, that is deciphering of oral and written messages, is quite afflicted, but the spontaneous word, even though it remains possible and often even abundant, is disorganised, with a destructuration of syntax, the use of one word for another, distortion of words resulting in a sort of totally incomprehensible jargon.

Thus we see that for J. Dejerine the affliction of language through circumscribed cerebral lesion assumes two quite different aspects depending on whether the inner language remains intact or is altered. However, even in this second case, intelligence as such remains normal, in any case at the beginning of the affliction, and provided it does not last too long. For in the latter case, isolation with regard to information about the outside world and destruction of the internal language eventually affect intelligence itself. But J. Dejerine refuses to see in this a demented state. “Moreover, what clearly shows the dependence that exists between the loss of the images of language and the state of intelligence is that when the motor aphasia victim is healed (and this is not a rare occurrence), his intelligence returns completely. In my private practice I have known several examples of motor aphasia, of specific origin or otherwise, appearing in young subjects who, once they had been cured, were completely able to resume occupations requiring much intelligence” (1977, 1, 106-107).

3. ANALOGIES AND METAPHORS

In order better to grasp the scope of these remarks by J. Dejerine on the links between inner language, the various types of aphasia and intelligence, we can devote a paragraph to a modest, but critical, use of comparisons. We are not unaware that in the Synoptic Gospels the rhetoric proper to a parable is a minor genre, good for those who will weep and gnash their teeth in the outer darkness. “‘Why do you speak to them in parables?’ He answered, ‘Because to you it has been given to know the mysteries

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of the kingdom of heaven, whereas for them it has not been given. For to him who has it will be given and he will have more; but to him who has not will be taken away even what he has. This is why I speak to them in parables, because they see without seeing and hear without hearing or understanding' ” (Matthew XIII, 11-13). Nevertheless, we will attempt to understand better these questions concerning aphasia by examining one comparison taken from the theory of information and a second one from polyglotism (cf. Acts II, 4-16).

Stated as simply as it actually is, the traditional conception is that of a sender who encodes a message and makes it run along a channel that ends in a decoding device, making it possible for the receiver, who shares the same code as the sender, to decode this message and thus to know what the other wished to transmit to him.

In the case of pure aphasia, where inner language remains intact, we can imagine a sort of homunculus, related both to the one in W. Penfield and to the one produced by Wagner, Faust's apparition in Goethe and the sly genie in Descartes. This homunculus has a perfectly constituted inner language and speaks to himself quite well. But he comes up against two disorders. If he wishes to emit a message, he can say it or write it quite well, his code is the same as that of the emitting machine; but this machine does not function properly. It is unable to encode his message. And since this machine occupying Broca's realm commits numerous errors in coding, even though the channel performs its role, at the other end the receiver is unable to decipher a great deal. However, master of his inner language, our homunculus can without difficulty emit a written message (for in this case the emitting machine receives correctly and dispatches it in the channel) and receive written and oral messages.

Second episode: attentive to the receptive system, which in reality is the posterior section of the two first left temporal circunvolutions (for a right-handed person), our homunculus realises that something is happening since there are sounds. But since the decoder does not function correctly, he receives only snatches of a message that he cannot decipher. However, similar to the analogy of pure sensorial aphasia, only his verbal decoder does not function correctly, and the homunculus can read, write and speak.

Our parable may seem rudimentary. The homunculus has control over inner language, his code is the same as that of his sender and his receiver, but, depending on the type of case, encoding or decoding remains quite imperfect, and one of the modes of sending or of receiving malfunctions while the three others function correctly.

Let us imagine for a moment a simple model of cortical aphasia in which inner language is afflicted. We can note in passing that for inner language the distinction between sending and receiving is not relevant. When I say to myself, "*Cogito, ergo sum*", there is not a sending followed by a receiving. The two aspects coincide. Thus if the inner language is affected, it is affected as a whole; it is not possible to imagine an isolated disorder of the sending aspect or of the receiving aspect separately.

In motor cortical aphasia (Broca aphasia), the sending equipment is affected, just like the inner language of our homunculus. When the homunculus wants to speak or to write, by the very fact that his inner language is affected the message is already improperly formulated, and he encodes it clumsily with a malfunctioning sender. The result is defective language production, both oral and written. But if the oral and written receptors are functioning correctly, their result—the oral or written message—is received by an homunculus whose inner language malfunctions; in this case reception is much better than the sending, but it is never perfect.

In sensorial cortical aphasia (Wernicke aphasia), our homunculus has a functioning sender but an afflicted receiver, and his inner language is likewise affected. In this case he has difficulty receiving oral or written messages already badly decoded by his receiver resulting in total malfunctioning of all verbal means of information. And when he seeks to express himself, even though his sender is functional, he is no longer able to avail himself of it so that he speaks a great deal, with a well preserved basic phonology but with alterations of vocabulary, syntax and semantics: deformed words, jargon, jarring and incomprehensible production.

This model, as we are the first to admit, is quite rudimentary, but it makes it possible for us to understand, at least approximately, the differences that occur depending on whether inner

language remains intact or is affected. Let us also not forget that for J. Dejerine inner language, far from transcending every attested idiom in some sort of *Ursprache*, is still a language; for when we talk to ourselves, we do so in a determined language — in French, for example — and true polyglots know this well. This is why when our homunculus seeks to send his message, he gives something to the sender that is already encoded, correctly when the inner language is intact, badly in the opposite case.

Let us leave the Gospel of St. Matthew and turn to the Acts of the Apostles, chapter II, to find a second parable, comparing a person suffering from aphasia to an isolated traveler in a country whose language he does not know and whose inhabitants do not speak his language or any other one he knows.

In pure aphasia, the traveler knows his own language perfectly. In pure motor aphasia, the message is perfectly organised, the sender produces it well, but decoding is not possible since there is no common code. In pure sensorial aphasia, the opposite occurs.

In the sixties we had an experience that illustrated this parable in part, especially for cases where the aphasia was not total. Our teacher, Henri Ey, had asked us to escort to Bonneval a Japanese priest who was interested in psychiatry. From the first instants, we realised that the only language we had in common and in which we could exchange messages was Latin, the ecclesiastic because of his profession and us because of our studies. He mastered it much better than we, especially since the experience of conducting religious rituals and an extended period of time spent in the Vatican had made it a living language for him, both written and spoken. Our knowledge of Latin was more limited; we had never used it more than as a dead language, and only in the written form. To complicate things even more, our pronunciation differed a great deal from his.

Despite tiring rapidly, we still managed to cope, each time being required to translate from French into Latin, in our inner language (presumed intact), and then to encode this written Latin into oral Latin, with a sender that had little practice in this. *Ejusdem farinae* for reception. This anecdote can only illustrate in part the instrumental aspect that aphasia retains as long as the inner language remains intact.

In the case of cortical aphasia, the subject is not completely

capable of speaking his message to himself, even before using a sender that works badly, in the case of Broca's aphasia, and the opposite in the case of Wernicke's aphasia. This is similar to what happened to us in Bonneval, at the end of the day, because the effort required became too great. The learned ecclesiastic began to formulate poorly in Japanese what he wished to say in Latin, and we were having the same difficulty in French; for the inner language of both of us was also subject to fatigue, a fatigue that functionally affected inner language.

EPILOGUE

We had not planned in these few pages to give more than one aspect of the multiple problems still raised by the study of aphasia; in particular we have said nothing about the historical evolution of the question, nor of cerebral localisations, nor the contributions of neurosurgery or modern techniques of computer assisted images or measurement of local blood flow, nor of possible restorations.

But we have centered our attention on the notion of inner language, and we then find ourselves confronted with questions of the instrumental aspects of this inner language and its relationship to intelligence.

Inner language is not some sort of familiarity with ourselves that is superior to every known language, but just the opposite; even in the most perfect solitude of meditation, we cannot avoid use of a definite language, whatever one it might be. The desert Fathers held the opposite view, but they meditated in Greek or in Latin and thus were able to communicate directly with God; for even if his existence might be debatable, it is certain that he speaks Latin, Greek and no doubt Hebrew. As for us, more modestly, even if we are doing mathematics, we use one or another known language; scientific jargon can never be more than a subsection of this.

This notion of inner language prohibits us from making of the homunculus above a sort of inner doll. For in the homunculus whose inner language is afflicted there is not some other homunculus whose inner language is intact. Let us return to the distinc-

tion made by J. Dejerine between pure aphasia and cortical aphasia, and let us examine one final metaphor.

In pure aphasia we are tempted to say that the subject, with its inner language intact, is normal, in a system one of whose elements (oral sending, oral receiving, written receiving) functions badly; this does not prevent the subject from being perfect, even given this partial defect that then seems instrumental and somewhat peripheral.

In cortical aphasia, we can picture a subject whose inner language is affected, whose mechanism is altered in one or another manner. But it is tempting to say that within this subject, whose inner language is affected, there exists an even deeper and more essential subject whose inner language remains intact. But if we grant this, we run the risk of falling into a *regressio in infinitum* that, within the subject of rank ($n-1$) whose inner language is afflicted, would place another subject of rank n whose inner language remains intact.

It is difficult to contemplate this without coming up against the well-known opposition of structural linguistics (F. de Saussure, N.S. Troubetzkoy, R. Jakobson, L. Hjelmslev) and of generative and transformational grammar (N. Chomsky). For N. Chomsky, any existing language can only represent the empirical and causal application of profound structures, identical in all speakers, that he imagines registered in the brain and more general than the grammar of every actual language. For structural linguistics (and its founder, F. de Saussure, seems perfectly clear on this point) there can only be actually known languages, and any search for an *Ursprache* can only confuse signifier and signified, language and word, synchrony and diachrony, syntagm and paradigm. It does not seem to us that this opposition can be resolved in a scientific manner, even though the attempt to inscribe deep structures in the central nervous system seems perfectly gratuitous without any possibility in present anatomical and physiological knowledge. As for the *Ursprache*, it bears a striking resemblance, in the work of N. Chomsky, to late twentieth century English grammar.

Final aporia: language and intelligence, aphasia and dementia. On the one hand P. Broca and J. Dejerine, and on the other Trousseau and P. Marie. Let us first of all remark that in pure

aphasia when inner language remains intact, when our homunculus speaks correctly to himself, intelligence is not altered and nothing in clinical experience suggests anything that might resemble some form of dementia.

In cortical aphasia, when inner language itself is afflicted, the question seems to us quite different. Either we think of intelligence as transcending any known language, or we cannot conceive of it as independent of an empirically given language. It does not seem to us possible to give a scientific response to such a question.

Georges Lantéri-Laura
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