THE THIRD ELEMENT OF SPEECH: PROSODY IN THE NEURO-PSYCHIATRIC CLINIC

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THE nomenclature of neurology is already so extensive and so chaotic that every proposed new term requires its apology and precise definition before being accepted—just as every term, new or old, should be weeded out, if it cannot be given a satisfactory definition.

When in a series of previous articles I have tried to introduce the term *prosody* (and its derivatives: dysprosody, hyperprosody, hypoprosody, aprosody) I had perhaps better formulate the apologia more explicitly. In order to do this let me first reiterate the definition of prosody, as consisting of the normal variations of 1. pitch,

2. stress, and

3. rhythm (not forgetting the important silent intervals—pauses), which occur in speech.

In philological circles the term prosody (and the adjective "prosodic", "prosodisch") has long been employed by Trubetzkoy and others. The universally known French dictionary of Larousse gives the following definition of prosodie: "Prononciation des mots, conforme à l'accent et à la quantité." The English *Chambers' Twentieth Century Dictionary* gives prosody the following definition: "That part of grammar which treats of quantity, accent and the laws of verse or versification." The term "prosody" is therefore by no means a neologism. But still it may have to be shown why it should be introduced into clinical neurology.

Having been interested in this element of speech since my youth, I have for very many years felt that the usual old terms for it, viz. "melody of speech", "melody of language", "Sprachmelodie", "chanson de la parole" and similar expressions are inadequate, because they call forth associations with musical faculties which are unreal.

It is a common and an old experience that completely unmusical persons may have a pronounced and semantically expressive "melody of speech", which in itself seems to savour of a contradiction.

A confirmation of the independence of the "melody of speech" of all musical faculties was furnished by a case that came under my observation during the last world war and which I have described in *Brain*, 1947: A young Norwegian woman who, recovering from a right hemiplegia and aphasia, caused by an extensive traumatic lesion of the left hemisphere, was left with a peculiarly changed language, the salient feature of which was such a complete change of her "melody of speech" that she was taken for a foreigner by everybody who did not know her. *In spite of this change of her "melody of language" her musical faculties were so good that her premorbid state could not possibly have been better in this respect.*

To regard this altered "melody of language" as an alteration of her musical faculties would in the face of these findings have been absurd and, searching for a non-committing, purely phenomenological name, I termed her condition

dysprosody, which was readily accepted by several prominent neurologists of Scandinavia and of Great Britain. Consequently I have also introduced the term prosody into our neurological terminology and have proposed for its alterations besides dysprosody the following terms: Hyperprosody, hypoprosody and aprosody, all denoting well-defined clinical conditions of some significance—particularly as regards the two last-mentioned modifications. I shall return to these alterations further on. But first a few general remarks about the development of prosody, which I consider the third fundamental element of speech.

In the first place it should be stressed that of all the three elements of human speech, viz. 1. vocabulary, 2. grammar, and 3. prosody, the last-mentioned element (prosody) is the oldest—phylogenetically as well as ontogenetically.

Even if one does not accept Schielderup-Ebbe's postulate that the dog has nine and the hen ten different kinds of expressive sounds, anybody who is sufficiently acquainted with dogs and chickens will know that they can express themselves to a certain extent by prosodic means (cf. the dog's high-pitched bark as a sign of glee and the low-pitched bark as a sign of hostility—and the cock's (or the chicken-mother's) syncopated and staccato calling to the hens (or the chicken) when a nice bit of food has been found—both definitely semantic (or propositional) expressions).

The small child usually starts exercising its prosodic ability before it can pronounce intelligible words or sentences. The careful observer will notice that a small child, still in that stage which the French call "la période de babillage", will frequently divide its chatter into periods resembling sentences. Let it be emphasized, however, that although the prosodic faculty only *begins* to develop at that early stage, the further development goes on besides the two other elements (vocabulary and grammar) through many years, and may continue throughout life.

First develops that *elementary* or "intrinsic" prosody, which is common to all individuals who speak the same language and dialect.

Then gradually, as intellectual needs arise and fail to find sufficient expression for the more subtle shadings in the mere choice of words and grammatical forms, a higher, more intellectual, more varied and also a more individual prosody develops. As also emotional states influence the prosody (mainly the strength of voice) from the very first, one can thus distinguish between

1. elementary, intrinsic prosody,
2. higher, intellectual prosody, and
3. emotional prosody,

without any fixed demarcation lines between them.

As illustration of *elementary prosody* it may here suffice to mention simple questions, which can be answered by yes or no. Here the last syllable is always pronounced at a higher pitch than the preceding ones. This questioning prosody may even override the arrangement of the words. Thus the simple sentence: "The doctor has come", will, when pronounced with a rise of pitch on "come", be equivalent to the question "Has the doctor come?" In other words, one and the same sentence may be a mere statement of facts, when pronounced with that drop in pitch on the last syllable which denotes finality. But pronounced with a rise in pitch on the last syllable it is turned into a question.

When we now turn to the *intellectual prosody*, a simple statement such as "Yes, he is clever", may be given different additional significance, if it is pronounced with raised pitch and stress on "*he*" or on "*clever*"—in the first case introducing an innuendo that other members of his family or his circle are not

so brilliant—in the second an insinuation that the person concerned may be lacking in other virtues. A pause after "yes" will in either case accentuate the derogatory suggestion. If, again, the same sentence is pronounced with "*is*" stressed and slightly raised pitch, the sentence becomes an emphasized attestation to the person's acumen without any derogatory flavour.

When discussing a person (e.g. a candidate for an appointment) the prosodic way, in which his name is pronounced may tell a lot about the speaker's opinion of the person. Here, besides the variations of pitch, the rhythm (particularly the pauses—"eloquent silences") is particularly significant.

"Well, Tom Brown", pronounced in a hesitating way, with a pause after "Well" and a raised pitch on "Brown" will betray some doubt about Brown's qualifications. When the pitch is lowered on "Brown", and the whole sentence pronounced not only hesitatingly, but also in a staccato way, it generally signifies a low opinion of the poor man. When, on the other hand, the very same words are pronounced quickly with a rising stress and pitch from the first to the last word, the significance becomes definitely laudatory, something like this: "Well, Tom Brown, that is the man we need."

Some people have such a well-developed prosodic ability that—if they are influential enough—they may make or mar a young man's career by merely mentioning his name without having praised or belittled him in actual words.

Even such straightforward simple words as "yes" and "no" may, by different prosody, be given a different meaning. By a rising pitch they may be turned from being firm assertions or negations into questions. And, mainly by hesitation, they may be given an expression of doubt, which approaches a "yes" to a "no" and vice versa. From our childhood we probably all remember how easy it was to distinguish father's or mother's firm "no" from an ever so slightly hesitating "no", open to further discussion.

In a Danish play by J. L. Heiberg, called "Nei" (No), one of the outstanding features is the heroine's bewildering an unfortunate suitor by saying "no" in so many different ways that the poor man does not know whether she means "yes" or "no". This particular prosodic ability of making a "no" signify "yes" seems to be a female prerogative, yet by no means exclusively so, however.

This leads us on to what I would like to call PROSODIC GRUNTS (*sit venia verbo*)—a very important part of everybody's "linguistic behaviour". When listening to a person we betray our interest, our sympathy, our assent or our disagreement, etc., by interjections* or by other short words (e.g. oh; alas; fie; pooh; quite; quite so; perhaps; oh, no, etc.) or probably more often by inarticulate sounds, "prosodic grunts", the prosodic flavour of which expresses our sentiments and opinions from enthusiasm to disgust, from approval to disagreement quite as clearly as articulate expressions and long sentences.

If for a moment we consider the question, What constitutes "a good listener?" we at once realize the role these prosodic grunts play. And if we further consider by what means we, in everyday life, judge the intelligence of our fellow human beings, we shall easily perceive that this judgment is not only founded on what they say and do (alas, more on what they say than what they do), but also—and probably as much, if not more—on their way of listening to ourselves, when we explain our wise plans or relate some dreadful or joyful event, etc. How the loss of proper prosodic grunts may influence our judgment of a patient's intelligence and emotional life in the not infrequent states of

* According to Nesfield an interjection "lies on the borderland between speech and the inarticulate cries of animals".

hypoprosody and aprosody will be dealt with in the following short survey of aberrations of the prosodic quality of speech.*

Prosodic Disturbances

In attempting to give a survey of the prosodic disturbances, I wish to stress the fact that hitherto the prosodic element in speech has not been studied systematically in a sufficiently large number of cases to allow final conclusions. Especially in aphasic disorders is this the case. When the prosodic problems—as I hope—will attract more attention in neuro-psychiatric medicine and can be studied systematically in a large number of cases this attempted (perhaps too simplified) survey may have to be modified.

The important hypoprosody and aprosody of paralysis agitans is, however, firmly enough established to allow a fairly full presentation.

The prosodic disturbances may be grouped into the following three categories:

1. *Hyperprosody*, characterized by an exaggeration of the prosodic variations.
2. *Dysprosody* (false prosody), where the prosodic variations, still present, are altered, stress and pitch being misplaced and rhythm often also changed from the normal.
3. *Hypoprosody and Aprosody*, characterized by a diminution or complete loss of the normal prosodic variations.

All these kinds of prosodic disturbances may occur as isolated temporary mishaps in normal persons under mental stress, particularly in that state of mind which we call "stage fright".

All of these may also, in different degree it seems, occur in the different forms of aphasia and should, in the study of these conditions, be given more attention than hitherto. They may also be encountered outside the field of aphasic conditions, as already mentioned.

1. *Hyperprosody* may occur in otherwise apparently normal persons as a sign of affectation, sometimes in combination with other signs of artificiality. (Histrionic type of persons.) It may further occur in maniacal, hypomaniacal and hysterical conditions. Finally, it may occur in aphasia of preponderatingly motor type as an attempt at compensation, when the verbal expressions fail. It is often combined with exaggerated gesticulation and mimicry.

2. *Dysprosody* may be encountered in aphasic conditions combined with agrammatismus. In very rare cases it may be the salient feature of the aphasic disturbance, as in the case, described by me in *Brain*, 1947, already alluded to. Knud Krabbe has observed two similar cases of dysprosody and Knud Winther one of dysprosody combined with hypoprosody. (Oral communications.)

3. *Hypoprosody and Aprosody* may also be observed in some aphasic conditions. Personally I have observed it in very pronounced degree in a case of the overwhelmingly sensory type. In the motor type it is as the oldest of the three elements of speech (see above), generally less affected than the two other elements, viz. vocabulary and the grammatical faculty. In the motor type it may even, as already mentioned, be exaggerated in a compensatory effort to correct the wrong choice of words.

* The "prosodic grunts", here mentioned with a semantic value varying with their prosodic flavour are, of course, quite different from the inarticulate humming sounds of hesitation, involuntarily uttered by a speaker (or an unprepared schoolboy) searching for adequate expressions. These sounds of hesitation ("hum and ha") are monotonous and have no semantic (or propositional) function. (Yet a very artful speaker may sometimes be suspected of using such a "hum and ha" on purpose as an introduction for a daring or offensive utterance, trying to give it the appearance of being made inadvertently.)

It is in quite another field of neurology, viz. in *paralysis agitans* and similar extrapyramidal disturbances that loss of prosody has its greatest frequency and practical importance.

Here it may lead to isolation of the patient within the family circle on account of the impression of mental dullness—both as regards intelligence and sentiments—which the loss of prosody entails—an impression, which is in the great majority of cases entirely false. To understand how this comes about we must revert to what was said above, particularly about the importance of the "prosodic grunts" and the good listener.

Let me illustrate the situation with a few commonplace concrete examples: A son and partner of a paralysis agitans patient will tell you something like this: "Father is not so bright as he was. When I propose a new business plan to him, he no longer takes the same keen interest in it as before, nor does he seem to grasp the points"; which may all be due to the fact that the "prosodic grunts" ("hm" and "oh" in different prosodic clothing) are either missing or bereft of their prosodic qualities, betraying interest, assent or opposition, and that any comment has also lost its lively prosodic quality in expressing approval or disapproval.

The patient's wife may get the impression that he has grown "cold and unfeeling" for the same reason. When she relates something joyful or something dreadful and sad he is no longer able to follow her narrative with the same adequate prosodic grunts of delight or sorrow and sympathy as before. And his verbal comments have lost that prosodic quality, which makes them ring true as an expression of genuine feelings. The frequent facial amimia or hypomimia will accentuate the appearance of unfeeling coldness and lack of understanding.* As a natural consequence it then frequently happens that the patient is not spoken to as often, nor in the same way as before. He begins to get isolated. Then, in his turn, he may feel sore about this altered mental atmosphere round him, and may become depressed, bitter and even hostile in his attitude to the surroundings. The vicious circle is now complete.

The possibility of such a development should not be overlooked and it should be incumbent on the physician to prevent such a tragic development by giving the surroundings an orientation about the misleading nature of these symptoms, thus making them understand that the disease has bereft the patient of his ability of *showing* his feelings and interests without this being a true sign of mental deterioration, as he may be (and generally is) as mentally alert as before, both emotionally and intellectually.†

When, in our day, attention has been so strongly focussed on psychosomatic ailments, it may be well to keep in mind that there are also somatopsychic ailments, probably as numerous and as important as the psychosomatic ones—possibly even more so. The one here outlined is a case in point.

Finally, an intriguing point has to be touched upon: Can anything be said about the localization of the prosodic faculty or of the lesions that cause its disturbances? As regards the prosodic faculty itself we are up against the same difficulty which confronts us in the localization of speech. Even though we can map out an area, where lesions are apt to cause aphasic speech disturbances, we cannot say that the faculty of speech is situated (or has its seat, its residence!)

* Even to the experienced clinician it may happen that when first talking to such a patient, he gets the impression of undue reserve and may even start wondering if the patient is slightly sarcastic or even hostile in his attitude towards the physician. This initial and transient feeling is quite understandable before any other signs of the disease have been observed.

† Hypo- and a-prosody may thus be just as fallacious as loss of facial emotional movements (hypermimia).

in such and such a region. We may be justified in talking of aphasic regions, but *not* of "speech centres". To stress this view I like to say that we speak (or ought to speak) with the whole brain. I think the same may be said of prosody: we probably prosodize with our whole brain. When, however, the prosodic faculty so often becomes deficient in paralysis agitans, we may probably be right in assuming that the lenticular nucleus (? the pallidal system) and/or *substantia nigra* belong to the structures that are necessary for the correct execution of the prosodic variations, which by no means signifies that prosody has its "seat" in these structures. In this connection I should like finally to quote Hughlings Jackson's too often overlooked words: "To locate the damage which destroys speech and to locate speech are two different things" (H.J., 1874). The same applies, of course, to prosodic disturbances and prosody.

SUMMARY

Prosody is one of the three fundamental elements of speech, the two others being vocabulary and grammar. It consists of variations in pitch, stress and rhythm, but is *independent of musical faculties*, wherefore such terms as "the melody of speech" and the like should be abandoned as terms which mobilize false associations. Prosody serves *semantic purposes* and enables us to convey meanings and subtle shades of meaning which the two other elements cannot express adequately. As important elements of language, in which the prosody is the sole semantic factor, the author mentions what he calls "*prosodic grunts*", inarticulate sounds closely related to interjections. Their importance is brought home to us by analysing the consequences of their loss, so frequent in paralysis agitans.

The prosodic disturbances can be grouped under the headings of 1. *Hyperprosody*, 2. *Dysprosody*, and 3. *Hypo- and a-prosody*. The occurrence and significance of these are discussed, with particular attention to the hypoprosody of paralysis agitans and its peculiar *somato-psychic* consequences. Finally, localization problems are briefly touched upon.

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