HABITUATION IN THE TACIT DIMENSION

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« Denotation, then, is an art, and whatever we say about things assumes our endorsement of our own skill in practising this art[1]. »
Michael Polanyi, *Personal Knowledge*

If, as Michael Polanyi rightfully claims, we can know more than we can tell, then the fact that significant segments of human knowledge are situated in the tacit dimension must hold consequential implications for human language as well. One obvious such implication is that our use of language, in so far that it aims at making the human condition explicit, must of necessity fail to serve as means of an exhaustive account of the human experience. Rather than settling on a similarly dismissive conclusion about the powers of language, however, Polanyi provides a complex and nuanced analysis in *Personal Knowledge* of what he calls « articulation » : the use of language to express human thought. Drawing on his treatment of language use in *Personal Knowledge* as well as on his theory of tacit knowledge elucidated in clearest terms in *The Tacit Dimension*, this paper will relate a severe case of aphasia and its rehabilitation therapy to Polanyi's theory of language. In aphasia, a language disorder suffered in the aftermath of a stroke or brain injury, patients must restore their lost use of language. Eventually, my purpose in this paper is to clarify the relationship between the tacit dimension and habituated forms of knowledge, and to suggest a characterization of habituated learning in terms of a repetitious access to specifiable content in the tacit dimension.

1. The Structure of Tacit Knowledge

According to Polanyi, the basic structure of tacit knowing must be defined through the relationship that organizes its two constituent terms into a meaningful whole. Tacit knowing, states Polanyi, is structured by the relationship of two terms, a proximal term form which we attend to a distal term. These two poles do not combine into tacit knowledge as independent and equal terms. Rather, according to Polanyi, they compose tacit knowledge through the place they take up in relation to one another, within the structure as a whole. Knowledge that is impossible to exhaustively specify is situated at the proximal pole of this structure. While we tacitly know or while we engage in the practice of a tacit skill, our attention focuses on the opposite, distal pole of tacit knowledge, forsaking in this way the details of the proximal term from which attention is withdrawn. At the proximal pole of tacit knowledge, a set of clues, observations, experiences and ideas are organized in such a way that through them a privileged distal term comes to be known in an explicit, conceptually specifiable manner. As a result, the proximal details on which tacit knowledge relies remain tacit. When two terms are arranged in this way, we can know more than we can tell, as the details of the proximal pole recede from reflective awareness into the tacit dimension[2].

In 1949, Lazarus and McCleary developed an experiment in which the subject of the experiment was confronted with nonsense syllables. Five of the ten syllables had been selected to serve as « shock syllables » by the designers of the experiment : these were

[1] Polanyi M., *Personal Knowledge*, p. 84.
[2] Polanyi M., *The Tacit Dimension*, p. 4-10.

syllables consistently accompanied by a shock when shown to the experimental subject. The identity of the shock-syllables was known only by the administrators of the experiment. Soon enough, however, the experimental subject also demonstrated signs of anticipating receiving an electric shock upon being shown a shock syllable – without nevertheless being able to articulate the rules governing the experiment.

In the experiments, the shock syllables and shock associations formed the first, proximal term, while the electric shock following them served as the distal term, concluded Polanyi about the experiment, the analysis of which serves as the paradigm example for his exposition of the structure of tacit knowledge[3]. The experimental subject's knowledge of the correlation between syllables and the shock constitutes knowledge in the tacit dimension. Although he knew when to anticipate the electric shock, he did not learn this by first identifying the shock syllables and by subsequently avoiding any mention of them. His recognition of the shock syllables never ascended to a conceptual level. In a modified version of the experiment developed by Eriksen and Kuethe in 1958, the subject of the experiment was exposed to an electric shock whenever he uttered shock words or associations to these words. This person learned to avoid the shock syllables without any means of inference, just like the subject of the first experiment, who was asked in vain to articulate the connection that governed his anticipation of the electric shock upon the sight of the shock syllables.

The subject, nevertheless, did discern the correlate of the shock while adapting to the experimental conditions, in so far that he was able to successfully predict a shock at the sight of the shock syllable. What does he seem to know through this discernment ? He appears to know of the rule that select syllables come with a shock and about all the details, too innumerable to list, required for performing the inductive inference by which one would venture to conclude a causal relationship between the two terms[4]. He only knows about this connection tacitly, however ; in other words, he is not able to list or specify the details on which he relies. Since this person's knowledge of the « shock-producing particulars » – the specific syllables or words that are coupled with the electric shock – is instituted as a form of tacit knowledge, these details were relied upon only in so far that they bear upon avoiding the electric shock. Because they did not occupy a salient position within the structure of his knowledge as a whole, they were known not in their specificity but merely in terms of their connection to the electric shock.

Reflection does not simply thrust us into the conceptual realm. Rather, it places us in a subject-object relationship with the phenomenon in question – which immediately makes us an outsider to the experience even while the experience is our own. Using Polanyi's own words, the difference by which we could specify what learning a tacit skill entails is the difference between « indwelling » (undergoing the experience by which tacit knowledge is acquired) and « seeing » (examining, analyzing, or observing something)[5]. From a phenomenological point of view, this difference may be articulated as the difference between applying reflection to a phenomenon as opposed to being privy to a lived experience of it. Because the subject's knowledge is tacit, it could not have been acquired by reflection. Just how much is there lack of reflectivity or conscious inductive reasoning in the learning process undergone by the experimental subject ? Toward the

[3] *Ibid*., p. 9.

[4] For Polanyi, the learning that takes place in this experiment is of a tacit skill not simply because an inferential account would not be able to enumerate all the relevant aspect of an inductively drawn conclusion, but because subception as a skill « combines elementary muscular acts which are not identifiable, according to relations that we cannot define. » *Ibid.*, p. 8.

[5] *Ibid.*, p. 17-18.

end of the experiment, the subject is shown syllables in such fast a succession that he does not even have a chance to read them with the reaction intact. The sensors placed on the experimental subject's skin register a heightened galvanic response, the same reaction previously associated with the experience of the shock, even in the last phase of the experiment, when the psychologists abandon the administration of the electric shock while showing the shock syllables.

When we speak of acquiring knowledge in the traditional sense, the « curriculum » is content-based : one must learn to represent the human experience of the world within a select theoretical framework. Polanyi's detailed characterization of tacit knowledge in the opening pages of *The Tacit Dimension* provides an opening, however, to analyzing a different kind of learning : the acquisition of skills and knowledge that draws directly on the tacit dimension. Knowledge of this kind is mastered when what one is aware of in the appearance of another term recedes in one's self-consciousness to the degree necessary into the background and once the second term through which the particulars come to be operative in one's knowledge occupies the center of one's attention to the requisite degree. Learning tacit knowledge, therefore, is the learning of properly relating the two terms of tacit knowledge in the following way: one must withdraw attention from the particulars in order to attend to another term.

Unstated in the text, Polanyi's intricate description of the subception experiments also implies a regulative principle for tacit knowledge : his suggestion is that the learning required for tacit knowledge amounts to acquiring a proper balancing between the two terms of tacit knowledge. The experiment is designed to habituate in the subject of the experiment this manner of relating the two terms of tacit knowledge. It assures that the experimental subject attends first and foremost to the electric shock and only in the margins of his self-consciousness to the shock-syllables[6].

There are, therefore, regulative prerequisites for a given skill or knowledge to serve as a tacit skill or knowledge and these may be specified as follows. In the case of any habituated form of tacit knowledge – riding a bicycle, learning to serve as a leader, becoming proficient in medical diagnosis, etc. – the tacit dimension must be relied upon properly, in a way that constitutes knowledge. This takes place if and only if the detail that is to serve as salient of an experience is attended with focal attention and when the supporting or subsidiary details are known tacitly, only as an inexhaustible set of particulars that are therefore impossible to articulate. Habituation – the learning of a tacit skill – thus amounts to the institution of the structure Polanyi identifies for tacit knowledge : the « proximal » terms must take their place in the proximal position while the « distal » term, that which is attended to through the proximal terms, must occupy its placement on the very opposite of the intentional arc of the knowledge in question *as* the distal term. Once this structure is in place, the distal term may be brought to characterization, while the proximal term will compose the type of knowledge that we are not able to tell. The two terms of tacit knowledge must be properly distanced in order to make it possible for the knowledge or skill in question to operate on the basis of details known without being specifiable. They must be habituated in an arrangement that fits these structural requirements, as a whole composed by particulars at its proximal and a salient entity at its distal pole, to be comprehended with the joint meaning of tacit knowledge.

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[6] I relied for details on the subception experiments not included in *The Tacit Dimension* on Robinson, Jenefer : « Emotion : Biological Fact or Social Construction », in Robert C. Solomon (éd.), *Thinking about Feeling : Contemporary Philosophers on Emotions*, Oxford, 2004.

2. Denotation: Using Words

In *Personal Knowledge*, Polanyi also casts denotation in terms of instituting a meaningful relationship that connects parts and wholes into a structure of a tacitly practiced skill. In his treatment, denotation becomes an act of meaning-giving in which subsidiarily-known particulars and their features are subsumed into the whole of a concept in a way that provides for the communication of personal knowledge through the formalistic vehicle of language. Speaking, according to him, is not unlike the activity of an expert taxonomist :

> « To talk about things… is to apply the theory of the universe implied by our language to the particulars of which we speak. … To classify things in terms of features for which we have names, as we do in talking about things, requires the same kind of connoisseurship as the naturalist must have for identifying specimens of plants or animals. Thus the art of speaking precisely, by applying a rich vocabulary exactly, resembles the delicate discrimination practised by the expert taxonomist[7]. »

Using words for the purposes of expressing ourselves is therefore an act of connoisseurship and a display of skills befitting a taxonomist : it requires discrimination and expert discernment. In particular, it amounts to classifying things in terms of features for which we have names : to categorize a rich diversity of observed phenomena into those wholes, and only those wholes, for which we possess words. What is more, in order to apply a « theory of the universe implied by our language » to the innumerable particulars of which the universe is composed, we must identify the multiplicity of the experience of the thing through a summary concept by which it is to be designated by only one word, as a unitary entity.

In most philosophical contexts, denotation is typically the concept used for this manner of designating by language – by words, or a string of words that form a meaningful linguistic unit – things and states of affairs, including states of mind. Within Gottlob Frege's formalist theory of language use[8], a word is to be conceived of as a « name » that a particular person equates with a description of an object, a person or a state of affairs. While on a linguistic analysis the denotation of a word is a name, the philosophical implications of Frege's views equate the word or name used with the concept of the thing being described[9]. Denotation, in turn, refers to the cognitive act of choosing a name that uniquely identifies the object, person or state of affairs described in a given person's propositional attitude[10]. Therefore, throughout what follows, I will use the term denotation for all cognitive acts that intend to pick out a definite intersubjective meaning

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[7] Polanyi M., *Personal Knowledge*, p. 84.

[8] Frege G., « On *Sinn* and *Bedeutung* » (1892) in M. Beaney (éd.), *The Frege Reader,* Blackwell, 1997.

[9] Though hardly a matter of a mere aside, because of the close logical relationship between name and concept, Frege's theory does not assume a necessary connection between concept and truth. In other words, Frege's concept is limited to language use only in so far that language constitutes our beliefs. Unlike many other theories, especially in the phenomenological/hermeneutic tradition, it does not automatically assume that a concept used in an expression must be a means to an expression of truth. I will retain this meaning for all my own uses of « concept » throughout the paper and, by focusing on denotation alone, will speak solely about the philosophical problem of language use for the communication of human thought. My theory will not expand to the verifiability of human knowledge concerning concepts.

[10] In addition to its denotation function, Frege also held that each word also has a sense and a reference. Once the theory is expanded in this way, Frege's theory raises another question, the problem of how to characterize and theorize what is *denoted* by words ; and, as such, they seem to rely on the notion that denotation as an integral act of any use of language rather than dismissing its central significance. Russell's objections to Frege, for example, explicitly concern the latter's theory of denotation (*On Denoting*, 1905) whereas Kripke's dispute with the descriptivist theory of names is a disagreement centered upon whether a word provides a definite description as its denotation (*Naming and Necessity*, 1980).

corresponding to the oral or written production of a particular word. Since one of the primary symptoms of aphasia is the inability to recall words, *i.e.* to designate a manifold of experience through a uniquely designating word, it is of primary importance to clarify the structure of the tacit skill involved in denotation for clarifying how speech therapy may help to habituate language use in these patients.

Because he does not clearly distinguish the linguistic achievement of « denotation » from « articulation » or any other general use of language – because he in fact considers them continuous – Polanyi's ideas on how we might find words to express or thoughts issue from a duality of approaches. In *Personal Knowledge*, he offers at least two theories in answer to this question. On the one hand, he categorizes words as « tools » : in so far that they can be identified « as such by a person who relies on them to achieve or signify something », words are subsidiary particulars through which the thought expressed comes to be known explicitly[11]. This understanding of the role of words in articulation conceives of the denotative function to which concepts and their linguistic equivalents may be put within the greater context of expressing human knowledge. A speaker may know of his or her words only in so far that the words serve as proximal clues for signifying something about the things being accounted through the words. Denotation, on this account, is attended with subsidiary awareness in order to allow for focal awareness on the meaning articulated by the denoting words.

Words, on this first definition, are relied upon as the particulars coordinated by the tacit skill of speaking, as particulars from which attention must of necessity be withdrawn in order to achieve an act of signification that connects the linguistic units of speech to the things under discussion. In articulation, one's awareness is focused entirely on the things of which language must make an account, while one places oneself fully in a position of reliance on the expressive power of language. The denotative function of one's use of words is entirely passive in this case and is contributed in a subsidiary manner. In fact, even the synthesis of the manifold which yields concepts of thought to be expressed is of a subsidiary kind. A thinker's or a scientist's first and foremost concern, after all, is to make claims that are truthful about the things discussed and which as such are worthy of adapting as knowledge.

Before examining the second of Polanyi's theories about articulating truth or knowledge about things expressed with words, it would be instructive to consider the denotative function of a word or concept in contrast with a different use one may make of words. It is not incorrect to consider denotation, in general, a subsidiary means to signification. Words find their way into human speech in more ways than one, however, and for this reason denotation is not always achieved as smoothly and automatically as Polanyi's first approach assumes. A fitting example of Polanyi's paradigm would be an unscripted speech fluently delivered. When this is the case, words indeed are attended only as subsidiary details to the meaning of sentences, explanations, proofs or theories. On the other hand, human speech does break down from time to time. Even the most eloquent speaker slows down at moments to look for a word that best fits his or her intended meaning, switching his or her awareness temporarily from the signifying activity of language to the denotative task of employing the right word. In more everyday examples, a more severe type of breakdown may halt our signifying linguistic activities. We might have to stop in the middle of the sentence because we do not remember a name or a word. We stop in these cases because we are well aware of the fact that there *exists* a word that is consistent with the signification we are trying to achieve, yet the word simply « does

[11] Polanyi, *Personal Knowledge*, p. 63.

not come to us ». It is on the tip of our tongue, which is why cognitive scientists refer to this as the « tip-of-the-tongue » phenomenon.
One need not be aphasic to encounter difficulties recalling the name of *that* person or the *most fitting* adjective that makes one's point exactly as intended – though this phenomenon is the closest one may get to characterizing the challenge involved in language use for an aphasic person who cannot recall words. The occasions on which this happens do not simply highlight an occasional active search for words even amidst our more complex achievements through language use. While giving a speech we focus our attention away from the words needed to express our ideas : « the words just came to me », we might say. What we mean is of course not that the words arrived without any apparent effort, but that the entire elaborate line of thought simply appeared to us while we were in the middle of speaking, as if it were a pre-packaged message freely and miraculously received. The ease with which we may draw our attention away from the words that « came to us » readily testifies to the fact that, under the circumstances, words indeed are like tools of our speech-making craft, so much so that the way their denotative function facilitates communication are the least worthy of our scrutiny[12]. Human beings are therefore capable of denoting through words without any considerable effort, *passively*. Interpreters may in fact denote without any apparent effort to designate things in question in two languages. In simultaneous interpretation, the denotation is automated, to such an extent that after the session the interpreter is sometimes unable to recall what was discussed by the parties to the communication.
The tacit skill of denoting passively, however, must have its origins in an active effort to achieve the denotation by which one builds up a lexicon. One is called upon to do so every once in a while even with a well-developed lexicon. These are the times when one stops to *actively* search for words. In articulation, as Polanyi insists, the place of a focally attended denotative function of word-selection or word-recall is taken by the sense-making activity supported by language use. While one articulates through words, « [t]he adaptation of our conceptions and of the corresponding use of language to new things that we identify as new variants of known kinds of things is achieved subsidiarily, while our attention is focused on making sense of a situation in front of us[13] », writes Polanyi. The primary achievement of articulation, it then appears, is the implementation of a connection between concepts and things that satisfies the intellectual criteria of the inquirer. In an activity quite unlike articulation, the type of activity that frames Polanyi's discussion of language use in *Personal Knowledge,* however, one's attention is focused away from articulating to identifying that most fitting whole – the concept and its corresponding word – by which a given manifold of experience is most properly designated. To distinguish this type of active manner of denotation from the general function of denotation involved in language use, from here on I will refer to the active search for words as denoting or the act of denoting.
I believe that Polanyi is aware of this difference in the denotative functions of words, because he presents almost exactly the above two terms – what I referred to as denotation on the one hand and denoting on the other – in a paradox he identifies in articulation. The paradox stems from a tension inherent in language use. « We intellectually owe so much to articulation, even though the focus of all articulation is conceptual [*i.e.* interested in concepts in so far that they allow for formulating theories], with language playing only a subsidiary part in this focus », introduces Polanyi the

[12] Naturally, these are also the type of situations when one might choose one or another word of the message so poorly that it conveys unintended – or not publicly intended – simplifications or biases.
[13] Polanyi M., *Personal Knowledge*, p. 118.

paradox[14]. For language to play a role in articulation, he continues, it must first be acquired as the conceptual framework, with the speaker of the language mastering it not in terms of its denotative function but as meaning corresponding to concepts – through an act of denoting. Only when we are aware « of the way our speech refers to certain things », and only once we couple this awareness with awareness of how the things to which language refers are constituted in themselves can we exhibit the skill of articulation. What we understand about things and what we understand about the denotative function of language are thus inextricably intertwined :

> « […] even while our thoughts are of things and not of language, we are aware of language in all thinking … and can neither have these thoughts without language, nor understand language without understanding the things to which we attend in such thoughts[15]. »

And yet, in practice, if it is to have any use, language must remain subsidiary in its functioning to the articulations of thoughts that use language as its vehicle.
The tacitly operating denotative function of using words must, no doubt, co-operate with the explicit use one makes of a word in an act of denoting or designation. In what follows, nevertheless, I will focus my inquiries primarily on acts of denoting. With their role in articulation adequately analyzed, I will propose it as the central term for characterizing the language difficulties involved in aphasic language disorders.

3. Aphasia

Aphasia is a disorder in one's ability to use language. It is typically the result of a brain injury, most commonly a left-side stroke, a degenerative illness, or a head injury. In the explanation provided from the neurological point of view, aphasia amounts to an impairment of converting thought into language :

> « Aphasia is a disturbance of the comprehension and formulation of language caused by dysfunction in specific brain regions. It results from a break-down of the two-way translation that establishes a correspondence between thought and language. Patients with aphasia can no longer accurately convert the sequences of nonverbal mental representations that constitute language. One might say that the images or representations that constitute thought can no longer be rendered in the words and sentences that appropriately translate them. The opposite process, the generation of internal imagery to match a sentence that is heard or read, is also defective in aphasia[16]. »

Depending on the severity of the injury to the brain regions, and on the combination of brain regions impacted, aphasia may induce difficulties for a person's speech, gesturing, word-finding, for his or her comprehension of written or spoken language as well as for the application of the rules of syntax and grammar. In what follows, I will focus especially

[14] *Ibid*., p. 106.
[15] *Ibid*., p. 106
[16] Damasio A., *Aphasia*, p. 531.

on the more severe forms of aphasia, global and Broca's aphasia[17], both of which present with anomia, the impairment in one's ability to use words[18].

No medical theory is capable of telling us with certainty what a person with aphasia experiences, and, more specifically, whether this experience is construed with the use of concepts. Any conclusions must be deduced from observations of the condition and from clues offered through interacting with patients either in a therapeutic or in an everyday context. While it is possible that aphasia merely impacts the expression of thought undertaken by the person, the more likely hypothesis is that thought patterns are just as much impacted by the language disorder as the communication of one's thoughts[19]. Depending on the type of brain injury and on the exact areas of the brain impacted, aphasia may improve considerably and, though this is not typical for most patients, may resolve entirely. Such improvements tend to happen within a limited timeframe following the injury : most patients make their fastest improvement in just a few months and up to the sixth month following the damage suffered by the brain's language-processing areas and up to two years after the injury.

In what follows, I will relate examples from my observations of a patient diagnosed with global aphasia during approximately three months of her clinical activities at the Rusk Rehabilitation Center of NYU's Hospital for Special Surgery. I found myself in the circumstances that allowed me to observe the patient by accepting an assignment to work with her as a proxy language therapist[20]. I first met her in the immediate aftermath of a left-side ischemic stroke. Beyond the language rehabilitation therapy, I followed her around as her interpreter during her therapy hours, spending with her five to six hours a day on average – including at least one day of the weekend – during occupational and physical therapy, music therapy, recreational activities and neurological examinations.

Unlike mutism, which typically involves a physical inability to mobilize parts of the body to produce words, aphasia is caused by damage to brain regions responsible for the

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[17] Aphasia may present in several forms. For the sake of brevity, I will provide descriptions of the two main categories within which these variants may fall : of the non-fluent and fluent types of aphasia. Global aphasia is the most severe form: global aphasics do not articulate words or are able to produce a few words only. Broca's or non-fluent aphasia is the category applied to patients who are capable of producing speech but whose speech is halting: the vocabulary used by such patients is considerably limited and the production of the sounds of the language requires great effort. The non-fluent type of aphasia also includes the diagnostic category of mixed non-fluent aphasia, which on the one hand resembles Broca's in terms of the impediments to speech production, but which also has as its symptoms the difficulties of language comprehension that would typically present in the fluent types of aphasia, especially Wernicke's aphasia. Anomic aphasia in which word-finding in particular is impaired without impacting language comprehension also may be classified as a fluent type of aphasia (*Neurology in Clinical Practice : Principles of Diagnosis and Management*, in Walter G. Bradley ; Robert B. Daroff, Gerald M. Fenichel, Joseph Janovic (éd.), Philadelphia, Butterworth-Heinemann, 2004.

[18] Even though in what follows I will focus primarily on persons whose aphasia is at the level of severity where the primary symptom is the inability to use words, it is worth noting that speech and language therapists consider *anomia* to be a diagnosis distinct from *aphasia.* In aphasia, we must think of the inability to use words – or to engage in an act of denoting, as I suggested above – as a constituent difficulty of the inability to use language.

[19] For an interesting contemporary empirical study suggesting the same philosophical conclusion, see Peter Langland-Hassan P., Faries F.R., Richardson M.J., Dietz A., « Inner Speech Deficits in Aphasia », in *Frontiers in Psychology,* vol. 6, n°528, p. 1-10.

[20] The patient in question is a Hungarian-English bilingual, which presents additional difficulties for (or, more optimistically put, scientific value to) language rehabilitation therapy. Because therapy for such patients is best to begin in the patient's primary language, I was called to assist in the process as an English-Hungarian interpreter for the doctors and the staff at the hospital and to « reproduce », on a daily basis, the language therapy in Hungarian, imitating the language therapist's own work conducted in English.

production of language and, unlike mutism, its interpretation requires a theory of the impact of the brain injury on one's cognitive acts and mental capacities. The patient whose progress I followed had an unusually severe case of aphasia : she was entirely incapable of producing words spontaneously. When I first met her, she neither treated me as a stranger nor as an acquaintance, and her treatment of her two daughters did not differ from the treatment she afforded to me. Without words from her, and with her environment unsure about whether she comprehended speech either in Hungarian or in English[21], our means of communication were limited. She did not rely on gestural communication – other than just a few facial expressions, and this too only occurred in later weeks – which may have been caused by her apraxia as much as by her aphasia[22]. She did react to emotional means of communication : for example, when her daughters embraced and kissed her, her face seemed joyous. On the other hand, she did not show any kind of emotional reaction to her situation or to the almost complete right-side paralysis of her body. Signs of her grappling with her post-stroke condition were seen only a few weeks later, when she started showing signs of frustration during her therapy, and her sadness and frequent uncontrollable crying occasioned a psychological diagnosis of depression.

In cases less severe than the aphasic difficulties I witnessed, the language impairment typical of aphasia is best demonstrated within the context of impaired sentence construction. I will offer two important kinds of manifestations of this. Firstly, a person presenting with non-fluent (Broca's) aphasia is prone to leave out words employed primarily for syntax – typically words not employed denotatively. An aphasiac individual might omit the words « the » and « and », for example, producing the sentence « Walk dog », which may have a number of intended meanings depending on the context. Using this sentence, the aphasic person may want to say that he will take the dog out for a walk, or may utter an instruction to the person he is talking to take the dog out for a walk, or may intend to report that the dog walked out of the backyard.

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[21] Our first day of working together suggested lack of comprehension: she heeded neither the English words of her physical therapist nor my Hungarian interpretation of the instructions. In view of the person we gradually came to know, this was highly out of character for her, and was likely because she had no means of deciphering what we asked her to do. Her ability to make sense of spoken words improved, however, considerably, though due to the nature of her diagnosis her precise level of conceptual understanding could only be deduced from encouraging indicators – alongside with experiences which also suggested conceptual confusions on her part.

[22] In addition to aphasia, the patient also suffered from apraxia – these two features of the aftermath of a stroke often coincide in stroke patients. Apraxia is typically defined as the loss of motor programs one relies on to string together the body's functioning especially in so far as movement and proprioceptive body schema processes are concerned. This was evident, for example, in the patient's inability to walk on her own. She needed day-to-day practice in habituating herself to organize her body into the correct order for moving it: to lift up and swing a leg while displacing the center of the body's mass toward the hip above the opposite foot, to place the foot in front of the other next, and to adjust the muscles of the upper body immediately afterwards in order to settle into a stabilizing upright posture. For most of us, these motor programs function smoothly and automatically, but for Evelyn this took considerable effort. She very often skipped a step or tried them in the wrong order and her therapist needed to catch her from falling.
As it turns out, speaking words also requires following an elaborate set of rules for coordinating the movement of the facial and throat muscles and for the forming of sounds, not to mention another important element of speech that is easy for us to ignore: the integration of the vocal cord amidst these motor programs. We did not even bother with the latter during the three months I worked with her: throughout the duration of the therapy I was involved in, she typically whispered. Every once in a while the use of the vocal cord was successfully coupled with the words, though in the way that indicated another therapeutic goal: the need to teach her how to modulate the volume of the sound produced. On those rare occasions, she spoke at the strength of a mishandled trumpet.

The curious feature of this first type of manifestation of aphasia is that the person appears to know with precision what he intends to communicate about the dog-walk subject-predicate pairing. Signs of frustration following instances in which the sentence is misunderstood may make this evident, and yet the linguistic formulation of the thought is inarticulate. The person in this example seems to be looking for the right non-denoting words to make his communication articulate. He is doing this not, however, as the scientist or a creative mind would in Polanyi's examples. He is searching for words not with the goal of making his hunch an integral part of his personal knowledge in view of the conceptual reorganization attendant to the proper articulation of his tacit knowledge – the meaning the aphasic person seeks to clarify in language appears to be clearly given in personal thought.

Patients diagnosed with Wernicke's aphasia, on the other hand, are more likely to speak in long sentences. They sometimes express themselves in sentences that are too long; so long, in fact, that they become the less meaningful the longer they go on. Unnecessary or context-inappropriate words may be added in language disorders of this kind; neologisms may be invented, often with the intention to express a thought through the sound of a new word ; paraphrasias (phonemic or semantic substitutions) pepper the sentence[23]. A fluently aphasic person might say, for example, that « You know that smoodle pinkered and that I want to get him round and take care of him like you want before »[24]. A sentence composed in this way may be an attempt to articulate a semantically advanced version of what a non-fluent aphasic would express as « Walk dog », meaning, for example, that « The dog needs to go out, so I will take him for a walk. »

Polanyi's reliance on the skills of « connoisseurship » involved in denoting is helpful to explain both modalities of the aphasic language impairment. Especially in the case of the reduced word production, the person with aphasia is struggling to compose an assertion from words at the level of a connoisseur : she or he no longer acts as a word expert who keenly discerns among varieties of sentential features that amount to distinctly different types of overall meaning for the set of words used. The impairment, however, would be misdiagnosed if it were attributed to a difficulty of syntax use. While the aphasiac person clearly struggles with integrating words into meaningful linguistic units of a higher order, the cause of this is the inordinate degree of attention paid to denoting with the words

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[23] In addition to aphasia, the patient also suffered from apraxia – these two features of the aftermath of a stroke often coincide in stroke patients. Apraxia is typically defined as the loss of motor programs one relies on to string together the body's functioning especially in so far as movement and proprioceptive body schema processes are concerned. This was evident, for example, in the patient's inability to walk on her own. She needed day-to-day practice in habituating herself to organize her body into the correct order for moving it: to lift up and swing a leg while displacing the center of the body's mass toward the hip above the opposite foot, to place the foot in front of the other next, and to adjust the muscles of the upper body immediately afterwards in order to settle into a stabilizing upright posture. For most of us, these motor programs function smoothly and automatically, but for Evelyn this took considerable effort. She very often skipped a step or tried them in the wrong order and her therapist needed to catch her from falling.

As it turns out, speaking words also requires following an elaborate set of rules for coordinating the movement of the facial and throat muscles and for the forming of sounds, not to mention another important element of speech that is easy for us to ignore: the integration of the vocal cord amidst these motor programs. We did not even bother with the latter during the three months I worked with her: throughout the duration of the therapy I was involved in, she typically whispered. Every once in a while the use of the vocal cord was successfully coupled with the words, though in the way that indicated another therapeutic goal: the need to teach her how to modulate the volume of the sound produced. On those rare occasions, she spoke at the strength of a mishandled trumpet.

[24] The examples listed were taken from Weisberg, R.W., and Reeves, L.M., *Cognition : From Memory to Creativity,* Wiley, 2013.

« dog » and « walk ». For someone who struggles with word-finding, to pick out these two lexical units requires attending to the denotative function of the words used, which would render any further aspects of language use secondary to this primary objective. The non-fluent aphasic actively denotes with the words « dog » and « walk » and because the act of denoting occupies the distal pole of his use of language, he is incapable of articulating his intended meaning in fluent speech.

In contrast, the fluent aphasic person relies on his use of words as a tacit skill. Nevertheless, his articulation of his thoughts is faulty. Some of the words used fail to pick out the right words, but the type of mistakes made suggest over-reliance on the easy, for most people automatic word-recall that allows most people to find the right words in fluent speech. In his case, articulation is automated, but it is an automation not of passive denotation through language use, but of denotation of a different kind. In these cases, the aphasiac individual designates concepts for which the proper words are recalled through a similarity of sounds and phonemes rather than through the correspondence of words to meaning. As a result, and for reasons quite different from the previous case, the articulation of thoughts fails to function as a habituated denotative skill.

4. Learning to Use Words: Language Rehabilitation Therapy

While they both aim at connecting concepts and words, relearning one's language after a stroke is an entirely different thing from learning a new language. Language rehabilitation therapy neither looks like nor does it amount to the activities involved in acquiring a second language alongside one's own. Learning a new language is eventually about learning what are equivalent ways of saying what we already know in our native language. Doing so requires us to learn new words for concepts we already have, and to master the rules of syntax and grammar so that we can express what we already know how to express with the grammar and syntax of our original language. On the other hand, language therapy with an aphasia patient is a repetitious and piecemeal way of working toward the restoration of a patient to linguistic functioning. To the observer, it looks mechanical, to the point of being boring and even frustrating; it certainly is frustrating to watch for family members who must witness slow progress in their loved ones.

While working with the patient already described, we undertook one hour-long practice on a daily basis, practicing no more than just a few linguistic structures and repeating the same few words or sentences over and over again. The sentences did not vary. We would say, several times and in several ways : « My name is Evelyn. I live in Queens, New York. I am from Hungary »[25]. We did not simply recite these statements. We started the sentence, leaving the last, self-related word blank for the patient to fill in (« My name is… » I would say searchingly in Hungarian.) At first haltingly, but later more and more confidently, she was able to carefully add the words missing[26].

Next, the practice advanced to producing the very same sentences in response to question prompts. By asking her in question form to produce the statements, the words she needed to answer were already provided for her, though in parallel syntax. « What is *your* name ? » I would say in Hungarian, and she would respond by stating : « *My* name is *Evelyn.* » Slowly, we also added some basic vocabulary: numbers up to ten and the days

[25] To protect her identity, I will call the patient Evelyn, even though this is not her actual name.

[26] For the sake of brevity, I omit here the description of approximately three weeks of the therapy before these sentences became a daily staple in our hospital lives. During this first phase of the rehabilitation, Evelyn was struggling to produce the sounds necessary for speech. These sessions simply aimed at teaching her how to articulate one or just a few words. To keep her motivated, the therapist used a family album: the first words she learned to say were the names of her loved ones.

of the week. These did not seem difficult for her to remember, but they did take a long time to produce. So we had her count money instead. This way Evelyn was also able to group and to move coins on the table instead of focusing on the numbers alone. We also spelled out the practice sentences so Evelyn could write them down (because of her apraxia, this did not at first produce legible words, but we kept at it anyway). She was very particular about her writing. For example, she was unhappy if we congratulated her on the writing before she had a chance to add the umlauts and stresses used in Hungarian. With facial gestures, she demanded to be allowed to complete her work before being recognized for the effort.

It was only after a while that we moved on to using words other than the words of the script – and even later on we only did so after practicing the script made up of the three sentences. The words used in therapy were for the most part words for common types of food, household items, animals, vehicles, and the like. Again, the « teaching » of these words was nothing like the teaching of words in a foreign language. We used cards featuring images, but Evelyn at first did not recall any of the words for the things seen. She was, however, often able to complete the word if I started with the first syllabus or even just the first sound. There were other complications involved in the use of the cards. First and foremost, Evelyn may not have understood at first that the images on the cards were representations for objects. Alternatively, she did comprehend that the cards represented objects, but she failed to understand that we were using them to evoke words from her. In any case, her word recall was considerably better when we used actual objects (this would suggest the former explanation)[27]. By the end of the therapy however – amidst all the improvements I am just about to describe – we were to rely more and more on the cards. At that time, however, logical functions hindered her progress. First in English, then in Hungarian, she heard each of us point at a word card and ask: « Is this an apple or a banana ? ». The answer to which questions was, consistently, « apple – banana ». The idea that the image may represent either an apple or a banana and that her task was to pick the right match was not successfully mastered during my work with her[28].

Whenever possible, we used basic words[29] and simple sentences in talking to her. My role in the process was to reproduce the language therapist's verbal prompts in Hungarian, imitating her therapeutic activities in every relevant aspect : in the tone of her voice, the rhythm and cadence of her speech and where she laid stress on specific words. We relied on the musicality of language as well as the fill-in-the-blank prompting method in her recreational therapy to continue the work. At the end of the day, during the much-awaited music therapy session, she carefully listened to guitar or piano renditions of songs by her favorite singer, Elvis Presley. She reliably added her part to the performance, for example

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[27] Out of an abundance of caution, the speech language therapist had Evelyn's vision tested but it was fine (she in fact loved to watch television). The context in which we were showing her cards and asking her to name the objects could not have been clearer. This, however, is offered from a perspective of a language user such as myself, who has many tacit assumptions in place about the one and only proper way images on a card and words are typically related.

[28] Interestingly, the yes/no dichotomy was easier for her, though we did practice it with melodic intonation. Here's an example of the script used : « Is this a banana? (with a silly face showing how absurd the idea is) Nooooo, it is NOT a banana. This is an apple. » By the end of my work with Evelyn, she did respond to yes/no questions, but her answers were on occasion incorrect.

[29] The standard used for « basic » was tied to the number of syllables: especially during her nonverbal stage, everybody working with was asked to stick to one to two syllables per word. These were the words ideally required for language rehabilitation therapy as well, but with the Hungarian language's lexicon so heavy on compound words, Evelyn had plenty of opportunities to « show off » and work above the basic level.

by whispering every single mention of « shoes » in « Blue Suede Shoes ». Music brought out her emotional side. While listening to her therapist play the guitar, she was able to overcome her apraxia and to lift her paralyzed right hand. The worries of her condition seemed so far away that at times she would contribute one or two of the entire missing lines without apparent effort. A typical day would culminate in a song nobody failed to appreciate – precisely because the last thing anybody ever did was to take the words practiced literally. « You ain't nothing but a … » we would sing, to which she replied « hound dog » in a whispering voice, but with an unmistakably triumphant facial expression.

After many weeks of proceeding in this manner, she arrived at a more « talkative » phase, suddenly and without notable transition. The number of words named in the hour-long therapy session increased considerably to as many as thirty or more. Instead of cuing her by the first syllable or the first sound of the word, the words were elicited by word-pairs: opposites of which only the first is stated by the therapist (to « up » she individually produced the word « down » – both in English and in Hungarian). Words were coming back to her: showing signs that she had something to say, she would produce random words and, quite soon afterwards, sentences. Parallel to the self-initiated word-production, the use of her limited repertory of facial gestures and body language became livelier – all suggestive of earnest efforts to engage others in conversation. More than anything, there was a great expansion to the scripts she was able to attend to within the same day : she joyfully completed fill-in-the-blank versions of a lullaby, a prayer or a poem. Most of the sentences I heard her say did not compose a semantic unit, though they were grammatically correct. What she said, however, was alien to the context and could not serve as a basis for guessing what she intended to express.

One possible clue to what may have been the challenge to her communication during these weeks is provided by her frequent perseverations. Perseverating aphasic persons are « stuck » on a specific word: while they intend to use a word denotatively, they produce the same word over and over again for different denoting tasks. The first time they use a specific word, it denotes exactly what the person intended to say. As the conversation moves on, they seem to have arrived at a new denotation and yet the word they produce is the word previously used – without the perseverating person being aware of the mistake. This is an unfortunate side-effect of making progress toward the restoration of one's use of language. At the very least, inner thought in this stage is coupled with language, but to the frustration of the patient, it is not the right coupling.

The process of language rehabilitation I describe here employed several methods of therapy customarily used in combination for the treatment of severe aphasia. The repeated use of the script is an element of Stimulation-Facilitation Therapy, which is designed to repeat and to thoroughly master a limited set of words or linguistic units in order to facilitate in the patient language production beyond the words or sentences used. The therapist's consistent use of an elongated « no » sound, along with an emphatically stressed and over-gesticulated statement of the wrong answer is typical of Melodic Intonation Therapy, which uses the parallels between language and music – such as the rhythm, stress and melody – to encourage fluent language production. The technical term for stopping amidst a sentence for the patient to « fill in the blank » is called chaining, whereas the use of word pairs is prescribed as a part of verb network strengthening treatment[30].

[30] Salter K., Teasell R., Foley N., Allen L., *Aphasia* (Evidence-Based Review of Stroke Rehabilitation, vol. 14.)

A common feature of the numerous therapeutic inventions in use is repetition of the production of an astoundingly limited set of words or sentences, with the intention to habituate speech in the patient. This is a strikingly strange idea : repeating the same three sentences in French over and over again could hardly « habituate » the non-French speaker to French, he would not acquire the language skills. The question posed by Evelyn's case then is precisely this : how and *why* does the patient recover his or her use of language in these ways and why is one's language use habituated through repetition ? What is most immediately apparent is that the script Evelyn so carefully and arduously practiced on a daily basis served as the anchoring project for the habituation and recovery of her language use. The focused use of words, as seen later, facilitated the recall of words in general. Words not featured in therapy and never used around the patient « came back » to her. In other words, repetition achieved the recall of words beyond the repeated content : it allowed her to perform acts of denoting on her own.

5. Conclusion : Habituation in The Tacit Dimension

Tacit knowledge, as is well known, has a peculiar feature : in order for it to function as knowledge, it must remain tacit. If one were to attend too closely to the balance of the bicycle during a bike-ride, to the sequence of the hand's motions while playing the piano, or to the letters lined up in a book to be read, the skills practiced would be disrupted. As soon as the particulars at the subsidiary pole take the place of the distal term and occupy focal awareness, the tacit dimension can no longer provide for knowledge. « Scrutinize closely the particulars of a comprehensive entity and their meaning is effaced, our conception of the entity is destroyed », states Polanyi in *The Tacit Dimension* :

> « Such cases are well known. Repeat a word several times, attending carefully to the motion of your tongue and lips, and to the sound you make, and soon the word will sound hollow and eventually lose its meaning. By concentrating attention on his fingers, a pianist can temporarily paralyze his movement. We can make ourselves lose sight of a pattern or physiognomy by examining its several parts under sufficient magnification[31]. »

Tacit knowledge is effaced and destroyed as soon as the precarious balance that provides it its unique structure is interrupted.
« An unbridled lucidity can destroy our understanding of complex matters », indicates Polanyi, which is the most common cause of the effacement of tacit forms of knowing[32]. Yet undue scrutiny is not the sole means by which tacit knowledge may fall apart into a meaningless collection of details and particulars. The tacit dimension and its ability to provide grounding for explicit forms of knowing may become disordered as a result of physical as well as psychic damage. In aphasia, a bodily injury disables language use. In schizophrenia, a psychic vulnerability provides for intersubjective difficulties by disordering a person's ability to effortlessly interact with others. Just like aphasic individuals find themselves incapable of relegating themselves to the degree of passivity with which we perform our denotations in an articulating context, schizophrenic persons also end up so anxiety-ridden about the subsidiary particulars of an intersubjective situation – such small details as the significance of a smile or the correlations between the swinging of a person on a playground and their attendant laughter – that they become

[31] Polanyi M., *The Tacit Dimension*, p. 18.
[32] *Ibid*., 18.

unable to integrate the behavior of others into a comprehensive and jointly signifying whole[33].

Aphasia thus provides a rare opportunity to consider language production not merely as a subsidiary means to making knowledge claims but as an end in itself. The language disorders associated with aphasia highlight the fact that using language for articulating our knowledge is not always practiced as a subsidiary function of the intellectual search for ever more integrated forms of truth. While most of us are able to allow the active achievement of denotation to fall into the background of self-consciousness while speaking, this is not the case for aphasic individuals. Afflicted with a brain injury that impacts the regions of the brain which participate in language production, the denotative function of their words and the sense-making capacity of their sentence structures come to the foreground of articulation. Analyzing words while they are being carefully selected, while their phonemes are being remembered and while the organs of the body are attentively sequenced to produce the required sounds, they denote in an active manner, coordinating a number of subsidiary processes with word-finding as their primary goal.

In this way, the act of denoting became a crucial focus of the examination undertaken in this paper of the tacit dimension. The rehabilitation of aphasia afforded an opportunity to inquire in further detail into how language comes to be habituated as a tacit skill. Language rehabilitation therapy facilitates a transition from using words while actively denoting to allowing language use to recede into the tacit dimension. It meets its goals when a person is capable of speaking of things *through* language : attending to the concepts of which he or she speaks rather than to the words used in speech. From a linguistic perspective, this goal is pursued by integrating word-use into a semantic and syntactic network. In particular, it is achieved by relying on the power of repetition. Careful and repeated practice appears to activate not only a denoting use of words but their integration into a whole as well : rather than establishing a firm understanding of the words or sentences taught, it appears to institute language as a tacit skill.

The possibility of recovering one's language use by repetition is an instructive example. In his writings, Polanyi often falls back on tacit skills acquired by bodily habituation, such as riding a bicycle. The habituation required for bodily skills falls into the ineffable domain and, as a result, it appears so minimal that it would be easy to conclude that habituation in general requires little beyond placing a person amidst a demanding situation, such as putting a child on a stabilized bike and letting them go at the right moment. Since it requires interacting with words or concepts, language rehabilitation offers a rare opportunity to submit the process of habituation to theoretical scrutiny[34].

Being placed amidst a given situation may foster bodily habituation, but not necessarily the acquisition of the vast variety of tacit forms of knowledge Polanyi identifies by their commonly shared proximal/distal structure. To habituate a tacit skill, the joint entity formed by the distal and the proximal terms of tacit knowledge must be interiorized in a particular way. The habituation achieved in language rehabilitation therapy demonstrates that effort. Time and repetition are required for putting into place a specific

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[33] Stanghellini G., *Disembodied Spirits and Deanimated Bodies : The Psychopathology of Common Sense,* Oxford, Oxford University Press, 2004.

[34] This is also the case for the notion of habituation in phenomenology, which is similarly focused on the bodily habituation of skills. C.f. for example the activation of body schema processes in response to sudden changes in the coordinates structuring lived space, in particular in Stratton's and Wertheimer's experiments (Merleau-Ponty M., *Phenomenology of Perception*). These experiments serve in many ways as a paradigm for Merleau-Ponty.

structure which allows one to know something through the particulars which have been repeated as part of the learning regimen.
As Polanyi writes, habituation must become « a means of making certain things function as the proximal terms of tacit knowing, so that instead of observing them in themselves, we may be aware of them in their bearing on the comprehensive entity which they constitute[35] ». This, just like in Aristotle's theory of the virtues, requires an interiorization of bodily as well as intellectual practices. The reacquisition of language in aphasic patients furthers this theory by adding that habituation achieves these goals best when it implements a practice through repetition that in many ways is oblivious to what the activity signifies. Habituation, when done right, is oblivious to the select words in practice in the language rehabilitation therapy. In education, the right kind of habituation is at first oblivious to the significance of the theory developed in the pupil's essay and focuses solely on the craft of articulating a creative argument. In ethics, habituation of the most impactful kind is oblivious to the fact that virtue is practiced for the sake of becoming virtuous. Intellectual habituation, thus, though much more transparent for a philosophical analysis, is hardly more complicated than bodily habituation : it « merely » requires the repeated performance of forcing the right particulars to the tacit dimension at the right time, in the right way, to the right degree and for the right purpose.

Works Cited

Bradley, Walter G. ; Daroff, Robert B. ; Fenichel, Gerald M. ; Janovic, J. (éd.) *Neurology in Clinical Practice : Principles of Diagnosis and Management*. (4th ed.) Butterworth-Heinemann : Philadelphia, PA; 2004.
Damasio A., « Aphasia », in *New England Journal of Medicine,* vol. 326, n°531-539, 1992.
Frege G., « On *Sinn* and *Bedeutung* » (1892), in M. Beaney (éd.), *The Frege Reader*, Blackwell, 1997.
Kripke S., *Naming and Necessity,* Wiley, 1980.
Langland-Hassan P., Faries F.R., Richardson M.J., and Dietz A., « Inner Speech Deficits in Aphasia », in *Frontiers in Psychology 6,* vol. 1-10, n° 528.
Merleau-Ponty, M., *Phenomenology of Perception* (1945), transl. Don Landes, Routledge, 2012.
Polanyi M., *Personal Knowledge* (1958), Routledge, 2005.
Polanyi, M., *The Tacit Dimension.* (1966), Doubleday, 1967.
Robinson, J., « Emotion : Biological Fact or Social Construction », in *Thinking about Feeling : Contemporary Philosophers on Emotions*, Robert C. Solomon (éd.), Oxford, 2004.
Russell, Bertrand, « On Denoting », *Mind,* vol. 14, n°479-493.
Salter K., Teasell R., Foley N., Allen L., *Aphasia* (Evidence-Based Review of Stroke Rehabilitation, vol. 14.), Canadian Stroke Network, 2013.
Stanghellini G., *Disembodied Spirits and Deanimated Bodie s: The Psychopathology of Common Sense*, Oxford, Oxford University Press, 2004.
Weisberg, Robert W. and Reeves, Lauretta M. Cognition : *From Memory to Creativity,* Wiley, 2013.

[35] Polanyi M., *The Tacit Dimension*, p. 18.