COGNITION AND VOLITION IN LANGUAGE

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PREFACE.

In publishing my paper on the relation of the cognitional and the volitional in language, I desire to express the great obligation I owe to Dr. Leo Polak, Professor of Philosophy in the University of Groningen, for all that he has done to enable me to make my work acceptable as a thesis for the doctor's degree. Thanks are also due to Dr. P. N. U. Harting, Professor of English Language, for many a useful suggestion.

I take this opportunity to acknowledge my indebtedness to my former teachers, Professor Dr. W. v. d. Gaaf, of the University of Amsterdam, for having guided my first steps in linguistic research, and Mr. J. Falconer, M. A., Lecturer in the University of Groningen, for opening up to me the wealth of English literature.

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As a last and mournful duty it remains to acknowledge the services of the late Mr. L. v. d. Meulen, of Groningen, to whom the greater part of the index is due, and whose early death robbed me of a most intelligent pupil.

Groningen, June 2nd, 1936. H. MULDER.

AAN MIJN VROUW.
AAN ONZE KINDEREN.

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CORRECTIONS.

On page 163, line 13, for "chapters IV and V", read "chapter II".

On page 182, note 1, for "IV. Z,", read "IV, 1,".

On page 207, line 21, for "Grundries", read "Grundriss".

INTRODUCTION.

1. The following thesis deals with the mental aspect of the ontogenesis of language. Can the acquisition of speech by man be accounted for without the intervention of mind, or must we postulate mind as one of its constituent factors? If mind has to be so postulated, what is the relation between the cognitional and the volitional aspects of mental activity? Are they separable attributes of mental activity or are they only distinguishable by the process of mental abstraction?

The settlement of the question is of the greatest moment for the methodology of language instruction. If language is obtained on lines suggestive of magnetic induction, the obvious course for the teacher is to create a linguistic situation which shall, by the natural operation of natural laws, fill the pupils with language as surely and as imperceptibly as iron is filled with magnetism when placed within a magnetic field.

If, on the other hand, mind is *the* great assistant or resistant factor in the mastery of language, it evidently does not do to let the linguistic atmosphere have its natural way with the learner and trust to chance to overcome the mental difficulty.

The fact that knowledge is not to be had by physical induction is universally admitted for every branch of science. Yet strange to say in the case of language, although man is naturally as ignorant of organized speech as he is of algebra and astronomy, belief is still fairly general that the acquisition of speech by the individual from the community proceeds on unconscious lines, with the auditory sense as the only medium. The advocates of the "natural",

"direct", or "imitative" method of language instruction, however, do not make sufficient allowance for the facts and circumstances surrounding the mastery of speech by infants and the amount of mental energy it requires. [1])

When thus the ontogenetic difficulties of speech are disregarded, language is easily looked upon as a "given", to be externalized whenever a person is prompted to speak. But there is no more justification for considering language to be given than for taking science to be given in the case of Newton, Lord Kelvin, Pasteur, Einstein, and all other scientists, who probably were no less skilled in the use of laws and figures than Shakespeare was in the management of decasyllabics.

2. The acquisition of language presupposes the existence of language as a ready-made instrument of communication, differing in different countries and regions and for different classes of society. But the problem of the origin and development of the great diversity of languages does not come within the present investigation. This was the great problem of the ancients, who were faced with the dilemma whether there was a natural language, that is a language which gives to each word its specific meaning — or whether people by a sort of common contract, a "contrat social" had arbitrarily fixed their language.

The findings of historical grammarians, the discovery

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[1]) Cf. the following passage by Paul Passy: "L'imitation, c'est là, en effet, le secret ouvert de la bonne acquisition d'une langue. C'est par *l'imitation — l'imitation naturelle, spontanée, irréfléchie* — que le petit enfant apprend sa langue maternelle sans fatigue, sans effort pénible, sans travail intellectuel exagéré. Il peut même en apprendre plusieurs simultanément . . . . C'est aussi l'imitation, non la construction qui doit être la base rationnelle pour l'acquisition d'une langue étrangère." — P. Passy, La méthode directe dans l'enseignement des langues vivantes. Paris 1899.

that there is such a thing as linguistic evolution, have practically overcome the old dilemma. Most people have ceased to believe in the existence of a natural language of the above description, or in an arbitrary language made by mutual arrangement—excepting such isolated instances as Esperanto, codes, signals, semaphores, and other artificial languages. We know languages, such as they are, to be the products of social and cultural evolutions, just like the other cultural phenomena of political societies, legal systems, popular customs and so on.

Our investigation is indeed concerned with the opposition of mind and nature, but in a different sense from the above. It asks what conscious factors of will and intellect bear a part in the acquisition of language, and if language, whether of the infant or the adult, can be explained as a mere physiological response; as also how far these different factors are necessary to account for the use of language.

3. The ancient views as to the above named dilemma may be fairly well exemplified by a reference to Plato's "Cratylus Dialogue" and Aristotle's "De Interpretatione."

The Cratylus dialogue is a drama with only three personages, Hermogenes, Cratylus and Socrates. Socrates is requested by Hermogenes to say what he thinks about the correctness of names, Cratylus having told him "that everything has a correct name of its own, which comes by nature, and that a name is not whatever people call a thing by agreement, just a piece of their own voice applied to the thing, but there is a kind of inherent correctness in names, which is the same for all men, both Greeks and Barbarians."[1] Hermogenes says he believes that there is no correctness

[1] Plato, Cratylus 383 A [Loeb Classical Library, by H. N. Fowler].

of names other than convention and agreement. .... "No name belongs to any particular thing by nature but only by the habit and custom of those who employ it." [1])

In his reply Socrates draws a comparison between the making of weavers' and other artisans' tools and the giving of names. We have to bore with a "borer", to weave with a shuttle, and to name with a name. "A name then is a kind of instrument." [2]) The name, which is said to have been given by the "lawgiver", is adjusted to its purpose of naming, just as the weaver's tools are made by the carpenter to serve the purposes of weaving, and the like is true of other instruments. Hence "the lawgiver must also know how to embody in sounds and syllables that name which is fitted by nature for each object." [3]) Further, as language is said to have been made by the lawgiver for the use of dialecticians, to enable them to ask and answer questions [4]), Socrates' point seems to imply that language, being primarily an instrument of communication, is a social activity. As the forms of weavers' tools are in the carpenter's mind before he fashions them out of the wood, so the forms of words are in the lawgiver's mind before they are concretized into sound. [5])

4. Aristotle says of speech that what is emitted by the voice is in reality a sign of the "passions" of the mind, the written language being a sign of what is emitted by the voice. [6]) He defines the sentence as a piece of sound having some conventional signification, with each of its separate elements denoting something too, although no affirmation or negation; and then goes on to say that all sentences are not judgements; only those being so which

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[1]) Cratylus 384 D. [2]) 388 A. [3]) 389 D. [4]) 390 C. [5]) 389 B.
[6]) Aristoteles, De Interpretatione I, 1.

imply a statement of the true or the false. [1]) All sentences do not contain such a statement; a wish, for example, is a sentence, but is neither true nor false.

By its insistence upon the statement of the true or the false as the essential characteristic of the declarative sentence Aristotle's definition comes to be parallel to that of the logical proposition, as appears from the following quotation from the Analytics: "A proposition or judgement is a sentence which affirms or denies something about something." [2])

Aristotle's reference to both the conventional and the expressional, i. e. the individual, aspect of the sentence leaves no doubt as to his having been aware of the social as well as the individual aspect of speech. His influence is easily traced in the sentence-definitions by later grammarians.

5. Lucretius[3]) takes speech to have originally been born from natural impulses: "But nature impelled them to utter the various sounds of the tongue, and use [4]) struck out [5]) the names of things, much in the same way as the inability to speak is seen in its turn to drive children to the use of gestures, when it forces them to point with the finger at the things which are before them. For every one feels how far he can make use of his peculiar powers."

"Lastly, what is there so passing strange in this circumstance, that the race of men, whose voice and tongue were in full force, should denote things by different words

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[1]) De Interpretatione IV.
[2]) Analyt. Pri. I, 2.
[3]) Lucretius, De Rerum Natura, V 1027—1388. English translation by H. A. J. Munro, Bohn's Libraries.
[4]) use = utilitas.
[5]) struck out = expressit.

as different feelings prompted? Since dumb brutes, yes and the races of wild beasts are accustomed to give forth distinct and varied sounds, when they have fear or pain and when joys are rife."

"Therefore, if different sensations compel creatures, dumb though they be, to utter different sounds, how much more natural it is that mortal men in those times should have been able to denote dissimilar things by many different words!"

6. Augustine refers the development of articulate speech, from inarticulate infant cries, screams and expressional movements, to the empirical self-activity of the infant in relation to its environment. [1])
7. Thomas Aquinas maintains that words and sentences are of man's own making, the use of speech being to the power of speech as a piece of furniture is to the wood out of which it is made. [2])
8. Bacon says "it is not of necessity that cogitations be expressed by the medium of words." "We see in the commerce of barbarous people that understand not one another's language, and in the practice of divers that are dumb and deaf, that men's minds are expressed in gestures." "These notes of cogitations are of two sorts: the one when the note hath some similitude or congruity with the notion; the other *ad placitum*, having force only by contract or acceptation." [3])

Remarkable is Bacon's saying that "judgment precedeth delivery." [4])

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[1]) Augustine, Confessions, Book I, 6 and 8 (Dutch translation by Dr. K. Fernhout).

[2]) Thomas Aquinas, Peri herm. I. Lect. 1; quoted from Dr. A. Giesswein, Hauptprobleme der Sprachwissenschaft, p. 157.

[3]) Bacon, The Advancement of Learning, Book II, chap. 16.

[4]) idem, Book II. 17.

9. Locke's opinion may be gathered from the following quotations. "Men making abstract ideas, with names annexed to them, do thereby enable themselves to consider things, and discourse of them, as it were, in bundles, for the easier and readier improvement and communication of their knowledge." [1])

"Words are intended for signs of my ideas, to make them known to others, not by any natural signification, but by a voluntary imposition." [2])

Locke was fully aware of the fact that "the great instrument and common tie of society" was not absolutely binding upon the individual, as appears from the following quotation. "There are few names of complex ideas which any two men use for the same just precise collection." [3])?

10. Rousseau expresses himself as follows. "Man's first language, the most universal, the most energetic speech, and the only one he needed before it became necessary for him to persuade assemblages of men, is the cry of nature."

"When people's ideas began to extend and to multiply, and a closer communion was established among them, they looked about for more numerous and more extensive signs." "They then expressed visible and moving objects by means of gestures, and those which strike the auditory sense by means of imitative sounds."

"At length they bethought themselves of using articulations of the voice instead of gestures, a substitution that cannot be made except by common consent." [4])

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[1]) Locke, An Essay Concerning Human Understanding, Book III, Chapter III, 20. [2]) Book III, Chapter X, 5.

[3]) Book III, Chapter X, 22.

[4]) J. J. Rousseau, Discours sur l'origine et les fondements de l'inégalité parmi les hommes. Amsterdam, 1755, p. 50, 52.

11. A work of great erudition is W. von Humboldt's "Ueber die Verschiedenheit des menschlichen Sprachbaues", which was first published in 1836 and has never ceased to influence linguistic thought even to this day.

Its opening lines reveal Von Humboldt's belief that every type of human language is generated by the human mind, "The division of mankind in nations and tribes, and the vatiety of its languages or dialects are inseparably bound up, but they are also connected with and subordinate to a third, a higher phenomenon, the power of the human mind ever to generate new forms, and often more elevated forms." "This diversified manifestation of man's mental power is the highest object (Ziel) of all mental activity (Bewegung), the ultimate idea that should be made to stand out clear from the world's history" (§ 1). [1])

"Language possesses an autonomous activity, which is visibly manifested, and yet essentially inexplicable." (§ 2).

Full allowance for intellectual collaboration in the production of speech and for the power of convention is made in the following passages.

"The idiosyncrasies (Geisteseigentümlichkeit) of a nation and the structure of its language are so closely united, that if one were given the other could be fully deduced from it, ...

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[1]) "Die Verteilung des Menschengeschlechts in Völker und Völkerstämme und die Verschiedenheit seiner Sprachen und Mundarten hängen zwar unmittelbar mit einander zusammen, stehen aber auch in Verbindung und unter Abhängigkeit einer dritten, höheren Erscheining, der Erzeugung menschlicher Geisteskraft in immer neuer und oft gesteigerter Gestaltung." "Diese verschiedenartige Offenbarwerdung der menschlichen Geisteskraft ist das höchste Ziel aller geistigen Bewegung, die letzte Idee, welche die Weltgeschichte klar aus sich hervorgehen zu lassen streben muss."

W. von Humboldt, Ueber die Verschiedenheit etc. § 1.

"Language is the external manifestation of a nation's mind; its language is its mind (Geist) and its mind is its language; one can never consider these two identical enough."

Yet language is not all intellect.... "If we separate intellectuality from speech, such an abstraction (Scheidung) does not really exist". "Language, apprehended (aufgefasst) in its real essence, is something permanent and transient. Even its maintenance (Erhaltung) in writing is always a kind of mummified preservation."

Von Humboldt is no less insistent upon the emotional than upon the cognitional aspect of speech. "Words," he says, "spring spontaneously from the human breast, without any compulsion or purpose, and probably no nomadic tribe did ever wander about a wilderness but it possessed its songs. For man, being a species of the animal kind, is a singing creature, joining thoughts to sounds however. [1]) (§ 9).

12. The rise of natural philosophy about the middle of the 19th century and the advent of Darwinism could hardly fail to influence linguistic opinion. The principle of the struggle for life and the survival of the fittest were supposed to prevail even in the region of speechsounds, and to be the ultimate causes of sound-changes and sound-losses within words and word-groups. Its influence is seen

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[1]) The insistence on the spontaneity of speech was part and parcel of the romantic spirit of the age. Compare e.g. Shelley's definition of poetry: "Poetry is not subject to the control of the active powers of the mind, and its birth and recurrence have no necessary connexion with the consciousness or will."

Shelley, A Defence of Poetry, 1821.

The untenability of this assertion will be demonstrated in Chapters IIIff. There is a vast difference between the aesthetic sensation of poetry and its expression.

in statements like the following by A. Schleicher; "Languages are natural organisms, which are born independently of human control. They develop, grow old and decay according to fixed laws. Linguistics is natural philosophy."[1])

13. Now, that there is such a thing as linguistic evolution, has been made abundantly clear by the discovery of the inter-relation of different groups of languages. Historical and comparative grammar have shed a sea of light upon linguistic phenomena, especially upon the changes to which all living languages are subject. The existence of class dialects has further revealed how strongly a person's speech is conditioned by his environment. Indeed it is not too much to say that convention, or rather society, is the real "name-maker". For as the individual must be born in some community, he is by that very fact tied down to the habits of speech prevailing within that community. Yet he can make these habits his real property only by personal observation and adoption. He does not get them by induction. Real property in this case means psychic property, i. e. the memory of words and phrases and of the principles of sentence structure. Once turned into psychic property, these principles may prove the fructifying elements of further speech and further enrichments of the common stock. Hence all linguistic evolution is co-determined by individual and social influences, and not the result of natural influences only.

14. On the emotional side we find Ernst Meumann in "Die Entstehung der ersten Wortbedeutungen beim Kinde." (2nd edition 1908). According to Meumann the older logico-conceptual interpretation of the first infant words

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[1]) A. Schleicher, Die Darwinsche Theorie und die Sprachwissenschaft[2], 1873, p. 7.

has lately given way to the purely observational, empirico-psychological view, which takes its stand chiefly upon the statistical observations of infant vocabularies, as made by American psychologists and linguists (Tracy, Holden, Kirkpatrick, Humphrey, John Dewey, Harlow Gale and the Misses Gale, and aided by the criticism of German psychologists, who are said to have nearly all of them been inspired by Wundt. (p. 3).

In its first stages infant speech is emotional and volitional. "The infant does not refer to objects, movements, persons, properties and relations, but exclusively to the relations of these phenomena to its own emotional and volitional existence."

"At first *tuhl* (infant corruption of Stuhl) means *I should like to sit down*[1]*; door means I want to open or shut the door;* afterwards these come to signify the objects *chair* and *door;*" This is where the intellectualization of speech commences. (Meumann, Entstehung, p. 57).

15. Wilhelm Wundt has attempted to synthesize cognition and volition under the common principle of psychological voluntarism. Being professedly psychological and sociological, his work has greatly added to our knowledge of the internal processes leading up to speech, and may be profitably studied by the linguist. But it seems to me that he does not sufficiently distinguish between the internal and the external processes of speech, stopping short in fact where the external process commences.

16. Among those who award priority to the emotional and the social is the Genevan scholar Charles Bally.

„The natural language," he says,[2] „which all of us

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[1]) It did not refer to any such desire in the example mentioned in I, 32.
[2]) Charles Bally, Le language et la vie. Paris, 1926.

speak, is neither in the service of pure reason, nor in the service of art; it strives neither after a logical nor after a literary ideal; its constant and primordial function is not to construct syllogisms, to smoothe down periods, to conform to the laws of the alexandrine. It is simply in the service of life, not the life of some, but the life of all, and in all its manifestations; its function is a biological and social one." (p. 18).

"In language the issue is one of practical motives, of an end to be attained, and never one of purely intellectual considerations; the intellect subserves this purpose, but its rôle is always that of an intermediary." The predominance of affective and subjective elements however, should not create the illusion that the intellect plays no part at all in linguistic operations. For "life and language in the same measure present to us the image of an organization. Now, all efforts at organization repose upon some intellectual operation." (p. 33).

Languages evolve under the action of the two contrary tendencies of the affectivity of the speaker on the one hand, and on the other the intellectual and analytic tendency which eliminates those affective elements which are strangers to the pure idea. (p. 76).

This is, for example, how the Old-French *chef* for *head,* came to be supplanted by the vulgar *tête,* from Latin *testa,* which really means *pot. Tête* has long since lost its affective value and is now being displaced in vulgar French by *bille, citron,* etc. (p. 66, 67).

New grammatical forms are similarly developing. In order to intensify the idea of admiration for example, the logical order (logical according to Bally, that is) of subject and predicate, which is obligatory in logical propositions, is inverted, and the indifferent *ce tableau est beau* is turned

into the emphatic *Il est admirable, ce tableau!* (p. 70).

In order to perform its social function it is necessary for language to be carried to a high degree of unification. Obedience to the common linguistic norms extends to all the members of the community. (p. 81).

17. Clara and William Stern's opinion is that the fundamental difference existing between the logico-intentional and the affectivo-volitional motives of speech should not be widened into a complete divorce. Even the most abstract speech (for example that of mathematical symbols) is not an indifferent system of signs for objective relations and values (Geltungen), but always remains more or less attached to the personal life of the speaker. (Die Kindersprache[4], p. 127).

"The way a man originally reveals himself (sich gibt) in any given situation is shown in a reaction of the whole of his organization, in which gesticulation, mimicry and action form an inseparable totality with the accompanying sounds. People mostly are far too little aware that the articulate speech (Lautsprache) which is disengaged from this organic tangle (Einbettung) is a very late stage (Etappe), properly speaking an abstraction." (p. 123).

Three general tendencies of speech can be abstracted from the totality of personal reactions. The first is a purely expressional one, an instinctive utterance, which is not directed to persons or objects outside the speaker. The second tendency bears upon the individual's connection with the outside. This impulse, which exceeds the boundaries of "self", shows two different aspects according as it is directed to persons or to things. If to the former the impulse is a social one.

These two fundamentals (Wurzeln) of the speaking impulse are not specifically human rudiments of speech, being also met with among the more highly organized animals.

With infants this rudimentary stage is noticeable only in the earliest periods of speech. Very soon the third impulse of speech, the intentional one, becomes active. It is wholly absent in animal cries. Intention is a being directed to meaning. Man in this stage of his spiritual maturity acquires the ability of referring to something by means of the sounds he utters. His utterances begin to signify something not only for the hearer ("that baby is in pain", for example), but also for himself. They cease to be expressions of his own condition, and come to stand for some object, some situation, a set of circumstances or a problem to which they give a name. These intentional acts may be called intellectual performances (Denkleistungen) and their appearance marks the progressive intellectualization and objectification of speech. The latter representatives of thought-psychology are therefore fully justified in insisting on the part played by logical factors in infant speech. (p. 126, 127).

18. The latest development in the emotional line, and what would seem to be a distant following of the ancient *physei* theory, is the physiognomical theory evolved by Professor Heinz Werner of Hamburg, who believes that things and words have common emotional aspects by which they are mutually fitted together. Things and words come to be less apart from one another in proportion as both are sensed and understood, not only in their peculiar symbolical value, but in their sensorily observable physiognomic qualities. [1])

[1]) "Darin nun, dass die Sachen nicht sachlich, sondern in ihrem physiognomischen Gehalt gefasst sind, stehen sie sehr nahe allen solchen Erscheinungsformen, welche, wie die Sprache, ursprünglich ebenfalls gefühlsmässiger und beseelter Einstellung ihr Dasein verdanken".

"Die Sachen und die Wörter sind also um so weniger voneinander geschieden, je mehr auch die Wörter gefasst und erlebt sind, nicht nach einem eigentümlichen symbolischen Gehalt, sondern einer sinnhaft-anschaulichen, physiognomischen Beschaffenheit nach."

Heinz Werner, Einführung in die Entwicklungs-Psychologie, p. 222.

19. A decided "intellectualist" is Edward Sapir.[1]) "There is all the difference in the world between involuntary expression of feeling and the normal type of communication of ideas that is speech. The former kind of utterance is indeed instinctive, but it is non-symbolic; in other words, the sound of pain or the sound of joy does not, as such, indicate the emotion, it does not stand aloof, as it were, and announce that such an emotion is being felt." "Instinctive cries hardly constitute communication in any strict sense.". "If the involuntary cry of pain which is conventionally represented by „Oh!" be looked upon as a true speech symbol equivalent to some such idea as "I am in great pain", it is just as allowable to interpret the appearance of clouds as an equivalent symbol that carries the definite message "It is likely to rain". "The mistake must not be made of identifying our conventional interjections (our oh! and ah! and sh!) with the instinctive cries themselves. These interjections are merely conventional fixations of the natural sounds. They therefore differ widely in various languages in accordance with the phonetic genius of each of these. In other words, the interjections and sound-imitative words of normal speech are related to their natural prototypes as is art, a purely social or cultural thing, to nature.". "They are only superficially of an instinctive nature. Were it therefore possible to demonstrate that the whole of language is traceable to the interjections, it would still not follow that language is an instinctive activity (p. 5). Sound-imitative words likewise are in no sense natural sounds. "They are just as truly creations of the human mind, flights of the human fancy, as anything else in language." The languages of primi-

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[1]) Edward Sapir, Language, New York 1921, p. 3ff.

tive peoples show no particular preference for imitative words. "Among the most primitive peoples of aboriginal America, the Athabaskan tribes of the Mackenzie River speak languages in which such words seem to be nearly or entirely absent." (p. 6). "We have no recourse but to accept language as a fully formed functional system within man's psychic or 'spiritual' constitution." (p. 9).

20. A very radical school of thought of recent origin, a modern refinement of the Lucretian view, is represented by the Behaviorists, who reject the idea of consciousness in speech as in all other motor responses.

"Literally hundreds of thousands of printed pages have been published on the minute analysis of this intangible something called 'consciousness'. [1])

In 1912 the objective psychologists or behaviorists decided "to give up psychology or else to make it a natural science." [1])

"In his first efforts to get uniformity in subject matter and in methods the behaviorist began his own formulation of the problem of psychology by sweeping aside all mediaeval conceptions. He dropped from his scientific vocabulary all subjective terms such as sensation, perception, image, desire, purpose and even thinking and emotion as they were subjectively defined."

"Behavior is what the organism does or says. Speaking overtly or to ourselves (thinking) is just as objective a type of behavior as baseball." [1])

It will be shown in Chapter III that on the lines suggested Behaviorism is unable to explain its own terminology, its own speech „behavior", or any speech behavior.

21. Diametrically opposed to Behaviorism are the views

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[1]) John B. Watson, Behaviorism, p. 4ff.

expounded by Ernst Cassirer in "Die Sprache", the first volume of the "Philosophie der Symbolischen Formen." "Die Sprache" is a powerful argument in favour of the assumption of mind being the ultimate cause of symbolical productions. Like art, science and mythology speech is a revelation and manifestation of fundamental spiritual functions in sensible material.

Both the sensualist view that "Nihil est in intellectu quod non ante fuerit in sensu", and its intellectualist converse lose their validity where this principle is accepted.

By proceeding from the concrete fundamental form (Grundform) of spiritual life itself, the dualism between sensualism and intellectualism is disposed of (aufgehoben). The appearance (Schein) of an original separation between the intelligible and the sensible, between the idea and its form (Erscheinung) vanishes. We remain tied down, it is true, to a world of images, but these images are not representative of any independent world of things (irgendeine an sich bestehende Welt der Sachen) but of worlds of images whose principle and origin is to be found in some autonomous creation of the mind. [2])

The highest objective truth which is made accessible to the mind (die sich dem Geist erschliesst), is ultimately a form of its own making. (Die Sprache, p. 47).

The problem confronting philosophers is therefore a

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[1]) Cassirer's statement recalls the following passage of "A Midsummer-Night's Dream":

"The poet's eye, in a fine frenzy rolling,
Doth glance from heaven to earth, from earth to heaven;
And, as *imagination bodies forth*
The forms of things unknown, the poet's pen
Turns them to shapes, and gives to airy nothing
A local habitation and a name."
(A Midsummer-Night's Dream, V, 1. 12—17).

decision between seeking the essence of mind in its pure originality, which is prior to all mediate structures, and giving ourselves up to the multiplicity of these structures.

The gulf between these two opposites (Gegensätzen) is not bridgeable by any effort of mediate thought: the further we proceed in the direction of the symbolical, the purely significative, the further we depart from the primal grounds of pure intuition (vom Urgrund der reinen Intuition) (p. 49). It is in the conscious cultural creations of language, art, science and mythology that life attains its genuine form, and is raised above the sphere of mere natural existence. (p. 51).

22. The foregoing survey, to which many more names might be added, reveals that linguists have not yet reached agreement as to the nature of speech.

"After a century of comparative philology," says Jespersen, the ancient question as to whether "words are natural and necessary expressions of the notions underlying them, or merely arbitrary and conventional signs for notions that might have been equally well expressed by any other sounds still remains an open one." [1])

Like Sapir he utterly rejects the idea of the acquisition of language being an instinctive process. "But when other people say that it all comes quite of itself, I must strongly demur: so far it is from coming of itself that it demands extraordinary labour on the child's part." [2])

The latter affirmation, I believe, will meet with the unhesitating approbation of the great majority of foreign language instructors in Holland, and by a growing number of teachers engaged in work upon the native tongue. After a controversial period of "oral" and "direct" methods

[1]) O. Jespersen, Language, Its Nature, Development and Origin, 1.3. [2]) ibid. VI, 1, 2.

there seems to be a general return to the older system, which involved appeal to the intellect first, and *via* the intellect to the emotional, as is indeed the natural procedure. For no external phenomena can be emotionally reacted upon unless they are properly sensed and assimilated by the mental constitution of the hearer, and assimilation by the ego is *the* fundamental condition for the successful reproduction, as much as for the understanding, of speech.

23. As regards the final solution of the problem Cassirer points out that, if signs were no more than mere repetitions (Wiederholung) of sensory perceptions, nothing could be done with them [1]), for they would be copies of what does already exist in the mind in perceptual form.

The imitation would never come up to the original. "In the face of the illimitable fullness and variety of perceptual realities, all speech-symbols would seem to be empty, and in comparison with the individual distinctness of the originals the imitations would be abstract and vague."

This argument of Cassirer's would seem to dispose once and for all of the *physei*-theory as a working didactic principle. If words were copies of natural entities, groups of words could only be groups of copies of natural entities, something like the terms of an algebraic sum to one who does not understand algebra. It is the hidden mental purport of the terms that matters, not the terms as such.

[1]) E. Cassirer, Die Sprache, p. 43.

I take it that Cassirer means that nothing could be done with them for communicative purposes. Otherwise the passage would not be clear. It is suggestive of the following passage in Cratylus 432, D: "Do you not perceive how far images are from possessing the same qualities as the originals which they imitate? Surely, Cratylus, the effect produced by the names upon the things of which they are the names would be ridiculous, if they were to be entirely like them in every respect. For everything would be duplicated, and one could tell in any case which was the real thing and which the name."

24. But this not all about the *physei*-theory.

In the light of modern linguistics Plato's system looks crude and naive, and it could hardly be expected to be otherwise. Not knowing the nature of sound the ancients naturally were unable to understand the nature of the human voice.[1]) Plato's phonetic discourses are accordingly on what seems to us a low level. The idea that letters are actually put together into words in a manner analogous to the putting together of artisans' tools by a carpenter, and that words resemble tools, will draw a smile from anyone acquainted with the rudiments of phonetics. For a hammer is a consistent physical entity, a word a fleeting psycho-physical existence.

The only permanence about the spoken word is a memory, a psychic existence, which has to be re-concretized into sound each time it is used.

His etymologies are based upon the mistaken notion that letters can be freely added to, or subtracted from, a word as long as its meaning is left intact, a similar process to what is done with the names of the letters of the alphabet, which are reduced to just one element of their names. *A* is called *alpha*, *b beta*, and so on, yet only the first elements of the names are actually used [2]). As letters always have to have their tails cut off before being fitted into words, there is no objection to lopping off the heads or tails of other words, if such is necessary to give plausibility to some supposed etymology [3]).

Plato did have already some notion of the fact that languages do not remain the same, but owing to the phono-

[1]) Cf. the following statement of Aristotle's: "Vacuum or empty space is rightly said by some to be the indispensable vehicle of hearing." Aristotle, De Anima, II, 8, 419b, 33. [Edwin Wallace, Aristotle's Psychology, Cambridge 1882.]

[2]) Cratylus, 393 D, E; [3]) ibid. 394 C.

logical backwardness of his age he was unable to grasp the causal connection between the nature of speechsounds and their successive changes. He is at last forced by his own argument to admit that the *physei*-theory, this attractive force of likeness, is, as Hermogenes says, a poor thing, and we are compelled to employ in addition this commonplace expedient, convention, to establish the correctness of names [1]).

25. Aristotle, who is quite positive as to the conventional character of names [2]), made a nearer hit towards the solution of the speech problem than Plato. His affirmation that speech is the symbol of mental events, and writing the symbol of speech, is as true to-day as when it was first written down. Most of his categories, too, have stood the test of time and are indispensable aids to all instruction which aims at being more than haphazard imitation of sound. No one, for example, can teach English properly to Dutch children unless they have a working knowledge of the distinction of time and tense, to say nothing of many other distinctions!

As regards his statement of the sentence being an emission of mental experience, it must not be forgotten that, in lies and other premeditated confabulations, the sentence does not reflect the real state of the speaker's mind but a different set of realities, thereby proving the mental autonomy referred to by Cassirer. (see § 19).

It should further be noted that, though insisting on the symbolic character of speech, he does not sufficiently

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[1]) Cratylus, 435 B.

[2]) „By nature no sound is a noun (nomen), it does not become so till established as a sign; for also the inarticulate cries of animals express something, but this does not make them nouns." De Interpretatione II, 1.

distinguish the symbol from its meaning, nor does he seem to have been fully aware of the difficulties involved in the externalization of mind-contents. A declarative sentence is *the expression* of a judgement, *not the judgement itself*, as the unwary might conclude from the statement that all sentences are not judgements. In like manner questions, wishes, commands and exclamations are only *symbols* of *mental situations, not these situations themselves.*

Now the expression of a mind-content, whether declarative, interrogative of otherwise, involves subordination to a common conventional standard, hence some measure of inferential activity, as we shall hope to demonstrate in chapters III, IV and V, and as every teacher knows only too well from bitter experience. Children are not naturally acquainted with the different ways in which assent and denial are expressed; they cannot tell a "yes" from a "no" or a question from a command.

26. Brain-physiology is another matter of which the ancients and the mediaevals had no inkling. Nobody in fact knew its real connection with speech phenomena until Broca made his famous discovery in 1864 that the functioning of the vocal apparatus was conditioned by the state of the left temporal convolutions of the brain. Broca's discovery was followed by Wernicke's that the memory of words was centred in another cortical area on the right and medical opinion is general nowadays that all motor reactions result from cortical stimulations. They can experimentally be produced by outside excitations of the cortex area, but the great fact of speech, as of all movement, remains that the normal mind can produce speech of its own free will through spontaneous and voluntary internal stimulation.

The findings of brain-physiologists have advanced the science of speech beyond all other discoveries. It has

taught us that the associative connection between things and words, and between mental situations and sentences can be interrupted in diverse ways by cerebral lesions. These associations must therefore be assumed to be one of the great fundamentals of speech.

The dependence of the production of articulate sounds upon cortical conditions negatives the possibility of speech being a kind of instinctive utterance similar to the cries of birds and other unlearned animal responses. For these responses are all of them reflexes of the glottal nerves, with the superglottal cavities playing only a passive part.

27. The opinion of the present writer is that the will and the intellect, as united in the ego, act in indissoluble partnership in the production of speech, but that the cognitional is always in the lead. For as all articulate speech is consequent upon the orderly stimulations of the vocal nerves, it follows that these stimulations have to be made in the same succession as that of the different sounds within each word. Now this succession of sounds, which constitutes the form of words and sentences, is an intellective entity in the mind before it is translated into muscular movement. Yet the intellective structure is genetically co-ordinated with the intention to say something. There is no divorcing the will from the intellect, nor the intellect from the will.

Further, whatever there is of intellectual activity in the structure of words and sentences is evolved by each individual for himself, his pattern, his "lawgiver" being convention. Save for the small number of onomatopoetic words, which are admittedly imitations or attempted imitations of external sounds, and even allowing that the emotional values of things belonging to different sense-perceptions may be identical and thus give rise to synaesthetic utterances, I do not believe that there is any such thing

as "vocal imitation of that which is imitated", or that "he who imitates with his voice names that which he imitates".

The fact that such utterly unidentical sound-groups as the English *chair* and the German *Stuhl* represent the same class of objects with the same emotional paraphernalia, bears out the Aristotelian view that language is symbolic, and meaning a matter of convention.

All the spatial images we possess, of the greatest as well as of the smallest objects, are data of consciousness, which themselves have no spatial dimensions and are therefore of a non-material character.

28. The subject began to engage my attention many years ago when, in the course of an English lesson conducted on oral lines, a girl in the lower form, on being asked if a certain misprint occurred in her book, answered: "Ja meneer". The question was repeated three times, before the girl, blushing and evidently remembering her duty to speak English in lesson, said: "Yes sir".

29. The decision as to whether or not there was a misprint evidently involved an act of thinking, the wrong form in the book having to be compared with the right form in the girl's mind.

As the first answer was made in Dutch and the second in English, the latter appears to have resulted from a fresh act of judgement.

30. Looking at the psychological side of the matter the incident not only proved that an English stimulant had produced a Dutch reaction, but its repetition showed that it had done so unconsciously, as no redress was made until the third repetition of the question had focussed the girl's attention on her mistake.

31. As time wore on, similar instances of the unconscious

use of the mother tongue were collected in great numbers [1]). Whatever English was produced in testpapers and in conversation bore general evidence of Dutch modes of expression, English intervening only in so far as the elements of its syntax had proved themselves able to hold their own against the tide of native thought. Many hesitations and corrections, both in compositions and in speech, spoke of a struggle going on in the mind before utterance was made. Once in a while there was indeed what might seem to be a flow of genuine English stuff, but if so it was mostly found to be reproductions from memory.

32. Experience seemed to warrant the suspicion that there was a general law behind it. If mental contents conveyed in a foreign tongue, are so commonly and so generally reflected on before being transmitted, or putting it in a more general way, if both the disintegration of a mind-content and the synthesis of a response are evidently acts of judgement, must not the intellectual factor be assumed to be an active partner in the constitution of every sentence? And if so what is its relation to the volitional agencies that move the vocal organism?

This then is the nature of the present enquiry. What character are the sound-groups by means of which mind-contents are transmitted from one person to another? Are they the products of conscious or unconscious, of intellectual or affectional agencies? Or if born from both cognition and volition, which precedes and which follows? It is hardly necessary to add that language is viewed only in its functional aspect, i. e. apart from its history.

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[1]) I cannot refrain from adding a very recent one. In reply to my question: What's on for discussion to-day? — a boy in the senior form said: "Bladzijde 33 en 34 van 't leesboek, meneer." (Page 33 and 34 of our Reader, sir.)

33. What strikes the teacher of English first of all in trying to give the language of his adoption to Dutch learners, is the fact that the English which seems to come so easily to learners on one side of the North sea, should take the average pupil such a long time to acquire on the other side. Why should fluency in the use of English be so slow to develop? Why should words that have been imprinted on the learner's mind over and over again, whether in isolated or connected form, refuse to range themselves into new sentences? Whence that multitude of mistakes which each attempting speaker of a foreign language finds himself guilty of at almost every turn? Surely, if the command of language were only a matter of hearing and repeating, with no intermediaries but the memory of auditory sense-perceptions, there could be no such resistance to the acquisition of a foreign tongue as has to be overcome year after year with every new class of beginners.

34. Yet the answer is not far to seek. The mastery of language, objectively speaking, is not a more difficult matter in one country than it is in another. The Englishman does not take any longer about mastering English than a Dutchman is about his Dutch. The great outstanding fact is that every average mortal takes many years to overcome the difficulties of communicating the ever varying complexity of mind-contents in intelligible fashion to his fellow-mortals. Experience proves that many secondary school-boys of fifteen or sixteen are still unable to bring out the necessary distinctions in their mother tongue, and often commit serious stylistic blunders. Uneducated adults are apt to blunder over common letters, and few ordinary educated people can be trusted to draw up commercial documents or other papers where logical precision is required. No man, in fact, given even the best of personal

aptitude, social "milieu", opportunity, and so on, will ever get the full command of his mother tongue, or of any tongue, for the simple reason that nobody is in a position to hear or see more than a very small proportion of what is spoken and written every day within the borders of his own community. Hence also the inevitable element of surmise in speech, following from the constant application of the known to the unknown. One expects to be understood on the ground of the mutual reactions experienced in the intercourse with fellow-men, but one can never be absolutely sure. Even functionally the mastery of language would be a lost endeavour had not the human mind succeeded in reducing the number of possible syntactical forms to manageable limits.

35. As a person's consciousness is in a constant flux, speech, if resulting immediately from automatic reactions to the ever changing tide of conscious imagery and if subject to none but those subjective affectional conditions from which motor activities are mostly born, and under which they exhaust themselves, there is no reason why, following the impulse of our associative imagery on their own affectual strength, we should not be rattling away all our lives long to no purpose. If we do not, it is clear that linguistic reactions do not succeed the train of associations mechanically. The conversion of central associations into corresponding sequences of motor activity must be under the control of some restricting power which tells what reactions shall or shall not be made, and which reduces the jumble of words to conventional forms that make them suitable for communicative purposes. These forms constitute the basis of understanding between speakers and hearers. They are the common standards or measures which can be applied to mental contents in a manner analogous to the

application of yards and metres to linear magnitude, speech being the ability to apply these forms to the illimitable supply of speech-material. This casting of the general speech-material into standardized forms or moulds, is primarily an intellectual performance, for no adjustment to a common standard can be made by the will before the standard is known. The process is closely akin to sculpture. No statue can be cut out of marble unless its form is previously in the sculptor's mind.

36. In order to establish the laws by which language is governed it is necessary to trace its development from a person's birth onwards. Now the facts of infant language, as far as I have been able to ascertain, have led me to believe that those who take the interjection to be the oldest part of speech have no experience to go by.

The earliest utterances of the infant do not resemble interjections any more than they do one-sound words. They are sounds in which the tongue, the lips and the palate play only reactive parts, the real action proceeding from the glottal musculature. With all the children whose development I have been in a position to watch more or less closely, interjections were far from being the first linguistic symptoms to appear. Indeed our present baby, aged three years and nine months, hardly ever reacts upon sensations of displeasure otherwise than by crying. There can be no question but interjections are part and parcel of the conventional stock of language, adopted by the infant from its surroundings. They are not instinctive sounds but acquired.

37. The inarticulate glottal sounds, produced at birth and long after serve the instinct of self-preservation. The random oral sounds, developing soon after and steadily gaining in clearness during the first twelve months or so,

contain symptoms of the growing social instinct. But the regular oral sounds which come to be associated with other sense perceptions are the most important ones by far, because they pave the way for the development of general ideas, by means of which speech attains its fullest and highest form. [1])

38. The present paper deals with every form of human language, both adults and infants, prose-writers and poets, educated and uneducated having contributed to its material. Occasional reference is made to gestures, semaphoring and telegraphy, and many bits of evidence have been drawn from the writer's experience as instructor of Modern English in secondary schools in Holland and in the Groningen University.

The primary object of our paper being the investigation of the general psychological conditions under which sentences are formed and conveyed from one person to another, no difference is made between speech as an individual activity and language as the common stock of the community.

39. One thing stands out very clearly from the experience of foreign language instructors. Volition alone will never get a man command of a language, the intellect being undeniably the primary agent in mastering it. If the will could claim priority, there would be no difference in the progress made by pupils having different intellectual capacities but equal volitional powers to spur them on. A boy's personal aptitude is as a rule found to be the greatest among the factors that make for progress in the linguistic field, although there is no doubt that affectual

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[1]) Clara und William Stern. Die Kindersprache, 4th ed. p. 318.

and volitional agencies are valuable assets. When there is no interest, there is no attention and no progress. Yet great as the influence of the latter may be, perception by the auditory sense is always antecedent to speech activity. Words must be sensed and analysed before they can be reproduced. Synthesis is impossible without previous analysis. Both are defective in the initial stages of speech-acquirement, but their operation is undeniable.

40. As stated above in § 25, our paper claims to be no more than a modest attempt to prove, both from experiences of infant language and from teaching-experiences in the class-room, that the analysis of sounds, which is primarily an intellective activity, precedes reproduction, which is both volitional and intellectual, volitional in so far as the movements of the vocal musculature are concerned, and intellectual because these movements are organized within definite physical limits, which only the intellect can distinguish. No attempt is made to supply a complete psychology of language. There is no discussion of semantic detail. What is given is only a kind of bird's eye view. Those who care for complete information on the subject we would refer to more exhaustive works on general linguistics. But such facts as have been mentioned are thought sufficient to warrant the following conclusions.

First. The impulse to speak may be a momentary experience, but speech delivery is always a sequential process, involving the repetition of all those mental processes from birth onwards which ultimately produce the association of sound and muscular impulses on the one hand, and sound and sense on the other.

Secondly. Emotions may be expressed in a variety of ways, by gestures and otherwise. But their expression by means of speechsound is impossible save through cognitive

channels. If speech can be made emotional it is only because sounds can be intensified or modified in many ways without destroying their ideational value. If a boy hiccups out *My — top — got — into — the — sewer!* the meaning conveyed is not affected by the sound, but inferred from it as readily as if the sounds had been produced in orderly unbroken fashion.

41. As regards terminology little need be said. Words are simple sounds or sound-groups representative as a rule of some units of sense, though sometimes units of great extension, as in the terms *war, history, engine* etc. Occurring as they do in ever varying context, they are strictly speaking abstractions. They possess inherent powers of association by which their meaning is often affected. They can be compounded into larger complexes and phrases. They are highly sensitive to affectual phenomena and the desire for economy. They are constantly being synthesized into fresh turns of expression. Hence they must be credited with some such independence as chemical elements possess, which, like oxygen for example, can be extracted from existing combinations and bottled up for further use as occasion requires. Most words denote such relatively independent units of sense, as *swan, red, to fly,* and can be "bottled up" in dictionaries; some are only indicative of sense units, such as the pronouns *he, she, this, those.* Many words, such as *misprint, misstatement, to re-instate, to resay, to overturn,* etc. are representatives of thought activity. Others again, such as the vocatives *Charles! I say; Please, sir,* and others, indicate to their recipients that there is some message for them, or convey a note of warning or some other hint; while some words suggest relationships without having any meaning of their own, such as the copula and other auxiliary words.

42. Physically speaking the sentence is a sequence of sound, a bunch of air in motion. Physiologically it consists in those manipulations of the vocal musculature which give each breath of outgoing air the conventional form it requires to make it a suitable instrument of communication. As these conventional forms are the ultimate principles upon which individual sentences are usually [1]) constructed, and as they are intangible, conceptual existences, sentence-structure depends ultimately upon conceptual, that is to say, upon psychic agencies.

Functionally the sentence extends from the speaker's brain to the hearer's, thus exceeding its physical range, which reaches from the speaker's mouth to the hearer's tympanum. Being in its physical sense just a bunch of air in motion, as devoid of sense or feeling as all other inanimate matter, the sentence is clearly seen to be a symbol, a physical existence standing for something which is not physical at all, but of a purely psychic character — a judgement, a question, a wish, a command, or whatever else it may be intended to convey. It may or may not reflect the state of the speaker's consciousness. But whatever its mental correlate on the speaker's part, it possesses some definite conventional form, and must therefore be perceived as a whole of sound and understood in its symbolic character if it is to fulfil its purpose.

Speech, operating through the sentence, can be defined as sound fashioned for the purposes of interpsychic communication. As no two speakers talk exactly alike, whether quantitatively or qualitatively, the term speech, when referring in a general way to the language of a community, is also an abstraction.

[1]) Usually, for convention is never absolutely binding upon the individual.

43. As words are capable of harbouring as much meaning as convention pleases to instil into them, it is quite natural that single words can be used as sentences. Their liability to modification by means of intonation and inflection, renders them all the more fit for the purpose.

Being units, sentences can be linked into further chains of thought by association with other predicables, or with units of their own kind. *What you say is true* is a complex sentence of the former, *he told me he abominated cocoa* one of the latter class.

44. By convention is meant the interaction between communities and individuals. In the province of language it is the influence exercised upon a person's speech by his environment. It is teaching and being taught, voluntarily or involuntarily, as the case may be. In the early stages convention acts through mothers, fathers, brothers, sisters, friends and so on. Next by the medium of the school-community and lastly, by the aid of the written language, convention is extended to the whole of the linguistic community to which a person belongs.

Though the community exists prior to the individual and mostly is the more powerful of the two, individual reactions of normally minded people are never wholly mechanical and many speakers or writers have considerably modified the current speech of their clan. Baby peculiarities even are apt to be taken up by the family and allowed to exist for years.

In code-language meaning may be purely arbitrary, so that convention takes the form of agreement by mutual consent.

45. As regards the terms *sensation, percept* and *concept,* they are used to denote the various stages of the cognitional from the reception of impressions by the sensory nerve

terminals to the general notions abstracted from these impressions. Sensation refers to every form of experience by the external senses or by the internal sense of muscular movement and position.

Perception is an advance upon sensation, a mental reaction in which the memory of past experiences clashes with present ones to mark the latter from the former as similar or dissimilar existences.

The difference may be exemplified from the different impressions made by a pair of shoes on adults and infants respectively. Although one must assume that infants have the same images cast upon their retinas as adults, they may be five or six years of age before they can tell a right shoe from a left one. Perception implies distinction of class, sensation does not. English teachers are but too frequently made aware of their reciprocal influence by the boys' confusing such associated forms as *arriving* and *arrived,* and hundreds of others.

46. *Cognition* embraces every conscious event of *sense, memory, imagination* and *thought,* hence it refers to what is commonly called intellectual mental activity, as distinguished from volitional activity (see 47). It stands to reason that we also possess cognition of volitional mental events and of their word-collaterals.

The term *image* refers to those facts of consciousness which have no external physical correlates, being revived within the mind by some associated stimulant, or by conscious attempts at recall. The terms *mind* and *mental* apply to every shade of thought and will activity, *mind* being accepted as the ultimate principle not only in associative sequences, but also in coherent organizations of thought and will. It is an inferential entity. Its action is seen in the dog-cow comparison in Chapter I, 36, for

what a person actually sees in distinguishing a dog from a cow is just the two animals and nothing more. And the remarks made in § 8, as also the instances of mental retardation and inversion recorded in III, 27, 30, 31 demonstrate the mind's power of regulating motor reactions, not only as regards the order in which, but also as regards the time when reaction shall be made to central stimulations. It is the ultimate principle for the explanation of mental events, cognizable only from its activity. One knows one's own mind and there is the end of it.

Thought is the activity by which from given experiences we are led to judgements, doubts, wishes, commands and so forth, as when the raising of a policeman's hand reminds the motorist of his duty to stop; or when the accent of a travelling-companion leads one to ask, *Are you an American?* — or when some feeling or other generates a desire to be somewhere or to do something, as in *I wish I was a mile hence* [1]); *I want to kill that tiger* [2]); — or when circumstances prompt the demand *Now you go and get me my hammer, Will.* [3])

Thought is simple when involving only two items of consciousness, as in *The stars are out,* or *The sky is overcast.* It is complex when its elements are derived from former experiences, as in *The strawberry-beds want weeding,* which expresses a conviction born from a comparison of present and past experiences of the garden; or when a look at the clock tells us that our train is on the point of leaving; or when the examination of a certain word reveals the fact that there is a misprint.

The acquisition of the art of speech, native and foreign

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[1]) R. Browning, The Pied Piper of Hamelin.
[2]) J. K. Jerome, Three Men in a Boat.
[3]) Jessie Pope, The Tiger.

alike, provides ample illustration of the different stages of thought-development. In either case the first thing to be sensed is just a mass of sound having hardly any limits but those that mark it off from silence. Little by little words and phrases come to stand apart in consciousness, but their reproduction is an even more laborious matter, a question of synthetic activity which as a rule is a long way behind the analysis of sound-groups.

Hence in the province of language thought assumes its most complicated character, consisting in that activity by which organizations of thought, feeling and will are translated into symbolic sound.

47. The terms volition and volitional refer to that department of mental activity which includes the variously graded emotions, as also the inclinations and the acts of will, in contradistinction to what is commonly called intellectual activity.

The close connection between emotions and acts of will is referred to in many well-known passages of Shakespeare's, best of all perhaps in the Merchant of Venice, IV, i, 40—67, summarized in lines 49—51:

> .....: for affection,
> Mistress of passion, sways it to the mood
> Of what it likes or loathes.

Compare also Macbeth I, vii, 25—28:

> .....: I have no spur
> To prick the sides of my intent, but only
> Vaulting ambition .....

In Hamlet's to-be-or-not-to-be soliloquy the paralyzing effect of contrary emotions upon the will is described as follows:

..... Who would fardels bear,
To grunt and sweat under a weary life,
But that the dread of something after death,
The undiscovered country from whose bourn
No traveller returns, puzzles the will,
And makes us rather bear those ills we have
Than fly to others that we know not of? [1])

In Julius Caesar, II, ii, 100—105, Decius Brutus declares his reason to be liable, that is subordinate, to his love:

If Caesar hide himself, shall they not whisper
'Lo, Caesar is afraid?'
Pardon me, Caesar; for my dear dear love
To your proceeding bids me tell you this,
And reason to my love is liable.

The process of volition, thus outlined by Shakespeare in poetic fashion, may be right enough for processes that are emotional throughout, such as hugging a baby or punching a man, it does not work out for speech reactions. For as speech reactions must needs take definite conventional forms, they are absolutely conditioned by these forms, i. e. by cognitional data. [2]) While fully prepared to admit that "*no mental modification ever occurs which is not accompanied or followed by a bodily change*", [3]) we would observe that the cerebral changes accompanying cognitional or volitional activities are altogether different from and independent of the muscular and other speech reactions they are

[1]) Hamlet, III, i, 76,—82.
[2]) Cf. W. Wundt, Grundriss der Psychologie § 14, 17, 21, and Völkerpsychologie, I, II. Cf. also G. Heymans, Inleiding tot de speciale Psychologie, Ch. 2, V.
[3]) W. James, The Principles of Psychology, Vol. I, p. 5. The italics are James's.

capable of producing. These speech reactions are a physiological advance upon mere cerebral reactions.

48. In so far as the paper is directed against the one-sidedness of the Behaviorist school, it is of a polemic character. But the bulk of it is a constructive attempt to assist in the solution of certain difficulties surrounding the methodology of teaching languages, by emphasizing the fact that language, in so far as it is air in motion, is an objective entity which can be studied objectively; that it can be experimented upon at will in order to test its formative and functional laws, and its relation to the subjective states of mind which it is intended to communicate to others. This is why facts have been resorted to for information and not theories, the paper having been kept as much as possible on inductive lines, as the only way to arrive at truth in this highly interesting question, the importance of which is due to the great didactic principle involved in its solution.

If speech is capsuled in emotion, language instruction can hope for success only by massaging the emotional outside of speech, viz. rhythm, metre, alliteration, assonance, etc. If on the other hand, in the social function of speech, sense comes before beauty, and if the very beauty of speech is bound up with its sense, the intellectual must come before its aesthetic aspect.

CHAPTER I.

THE BIRTH OF WORDS.

1. Voice in its most elementary form is among the natural endowments of the new-born infant. Crying is one of its first reactions upon its entrance into the world. Since the power of crying cannot be traced back to any previous observation of voice-activity in others, it must be assumed to be an instinct.
2. The absence of the vocal noise points as a rule to some irregularity, some obstacle or other in the breath-passages, which it is the first care of the attending obstetrist to remove. By slapping the fleshy parts pain may have to be added to the natural discomforts attending birth, in order to ensure the free and proper action of the lungs.
3. For many weeks after, crying continues to be the only sound made in return to excitations from without or within. The intensity and timbre of the cries tell the mother's ear whether the sound is a natural reaction upon sensations of the appetite, or whether other physical discomforts are calling for redress.
4. The earliest symptoms of vocality are reactions upon tactile stimuli. As regards the attributes of these first sounds it may be observed that from their first occurrence they show the peculiarities observable in adults. Some infants open their voice-passages as it were little by little, tightening the vocal chords without previous closure of the glottis, thus producing what is known phonetically as the gradual beginning; others show the more irregular and broken onset obtained by closing the glottis and penning up the breath below, so as to send it out afterwards in

jerks, the so-called clear beginning. The former method of manipulating breath yields lengthy drawling tones, the latter hiccuppy ones. Both forms may be combined or rather alternated.

5. The reactions of the vocal muscles are not the only ones to be observed about infants. The coughs in cases of colds, their yawning with the attendant movement of the arms when waking from their slumbers, deserve to be noticed, inasmuch as they show that practically all the conditions for speech-production are complied with. Nor must the sucking and swallowing instincts be forgotten, with their concomitant movements of the lips, the tongue and the uvula, and the respiratory organs. In fact, but for the absence of the teeth the whole speech-apparatus could be employed at once with the same degree of perfection as in adults. The teeth, however, useful as they are in the formation of dental sounds, are not indispensable, as appears from the fact that toothlessness does not seriously interfere with the speech-capacity of adults. If a person removes his false teeth the quality of his sounds will be affected, it is true, especially the lip-teeth, the front-teeth and the side-consonants but even these three classes of consonants may be produced with sufficient distinctness for recognition, the others, including the vowels, being scarcely modified at all.

6. If the organs of speech, therefore, could automatically move in response to sound-excitations from without, returning sound-waves just as walls and mountain-sides and clouds and other objects do, or taking their cue from some other person's speech, as one tuning-fork takes up the vibrations of another, there would be nothing to prevent a mother's endearing terms from being echoed by her baby.

Or if speech-production were merely a matter between

speech-stimuli on the one hand, and the vocal organs on the other, there is no reason why new-born babies should not speak.

7. Vibrating bodies are unable to affect the auditory sense until their oscillations attain a frequency of about 20 per second. As most sound-vibrations travel at a far higher rate, attaining a maximum of more than four thousand per second, the tympanic membrane may, within the space of one hundredth of a second, have as many as forty vibrations to respond to. Moreover, as no sound is ever used disconnectedly for so short a time, or independently of intonation and the accidents of its surrounding resonance, no sound can be said to be physically simple.

Nor can sound-production be said to be a simple process from the motor point of view, seeing how great a number of muscles co-operate in its formation. If therefore, we declare infant-sounds to be psychologically simple, it is with due respect to the multiplicity of their corresponding physical vibrations and the complicity of the muscular process.

8. The early sounds are inarticulate and simple in so far as the tongue, the great modificator of speech-sounds in adults, does not take any active part in their production. Hence consonants, that is the oral consonants, are conspicuous by their absence, and the only modifications to which the drawling vowels are subject are the inevitable glides and breaks occasioned by the opening and closing of the voice-passages and the requirements of breathing.

9. The sounds, then, are vocalic in character and of the neutral kind, being generally toned to the *əə* and *a:* varieties. They remain simple as long as the stimulus to vocal reactions continues to be so. But other sensations are presently awakened in addition to those evoked by the regular call of appetite. Soon the time arrives when sleep and

feeding and baths and changing cease to occupy the whole of the twenty-four hours, and waking intervals occur, with admiring parents and brothers and sisters standing round the cradle. Caresses follow admiration and presently receive the first conscious response when the mother's heart is delighted with the first smile of her baby.

New sounds begin to be heard as well, sounds of contentedness, easily distinguishable from cries by their force and intonation, but showing little or no difference from them in quality, being still couched in the *əə* and *a:* keys — and conveying no more sense than the purring of a cat.

10. Little by little, however, as the bodily muscles gather motion, the speech-apparatus develops too. In waking moments not only the arms and legs start their first practice, but also the tongue muscles begin to act, and with these first exercises fresh stimuli are gathered to rouse the psychological powers from their latency.

Sucking their fingers or thumbs is a pastime many infants indulge in from birth. It is a manifestation of the sucking-instinct, because babies will turn their mouths towards any object held against their cheeks to suck it if they can. These first movements of the infant mouth are involuntary and so are the finger-movements. But plucking at their fingers is one of the first games of a more advanced stage and one of the first steps in the evolution towards conscious action. The bringing together of the fingertips, and especially their separation, evokes visible reactions in the face and eyes, probably the first sensations of surprise. The fingers are soon discovered to be movable at pleasure and the game is repeated. Other sensations of touch, derived from contact with pillows, blankets and the sides of the cot, as also from the frequent handlings by its nurse and mother, assist in the development of the substantive instinct. The

infant discovers the existence of "bodies" as permanent possibilities of sensation [1]) and comparison sets in, as is evidenced by the different reactions of pleasure and displeasure, of smiling and crying, at sight of familiar and unfamiliar faces and things.

11. As soon as the tongue begins to move together with voice-vibrations of the vocal chords, diversification of sound commences. The neutral vowels have their initial and final parts modified, and presently consonants make their appearance. Baby is beginning to find its tongue, is beginning "to talk", as the proud mother puts it, especially when vocal reactions are made in response to motherly addresses.

12. Development of phonetic material thus proceeds, from the simple to the complex. The first consonants heard are mostly those resulting from the natural movements of the lips in opening and closing them. But as life intensifies, muscular exercise increases. The natural sounds become more and more diversified. The place of articulation moves from the neutral to the more remote positions, adding front and back vowels to the original *a:'s* and *əə's* and tongue-consonants to the labials, so that at the age of twelve months the infant may have travelled a good distance in the phonetic field.

13. Unconsciously however, as appears from the following instance. The sound-group *butə, butə, butə,* heard from a fourteen-months-old baby on August 26th 1928, was or appeared to be forgotten only three days later, when it was not at any rate reproduced in spite of the sound being repeated to her for half a minute or so. A fresh combination *i:wtə, i:wtə, i:wtoa* had, it seemed, dispelled the former

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[1]) J. Stuart Mill, A system of Logic, Bk. I, Ch. III, p. 7.

one. These random sound-combinations do not infrequently extend to sounds not forming part of the stock-in-trade of what is called "the mother tongue".

Dutch children may be heard to pronounce such alien sounds as the English *th*, the open bilabial consonant, the lip trill (as in brr, brr, brr).

14. The following sounds were collected from the above mentioned girl when she was fifteen months of age, in the sequence here given: Jeb, buwɔ, bà, à bà à u u, ət ət lili la pu ja, toa, tɔx wɑ:, ɔ: tɑ:, puta. This shows that she had all the fundamental vowels i, e, a, ó, u and ə at her command, though some of them in their short forms and of the consonants b, p, w; t, l, j and x. Her physical and mental development had never been interfered with beyond the necessary. Nor had she up to that time of life ever expressed anything but satisfaction or dissatisfaction. No word suggestive of the things outside her had ever crossed her lips.

15. The advent of the first word associated with the child's surroundings marks a new phase in its development. There may have been word-groups resembling words but they were empty emissions of sound that conveyed no definite meaning. There was some kind of contact with the surrounding world in the crying stage. Vague and indefinite as it was, it was sufficient to communicate what desires or other emotions might be felt. Some degree of association between certain sounds and things or persons was also denoted by them. There were responses in turnings of the head and smiles when father's or mother's name was mentioned, but these were not suggestive of anything beyond the pleasure which a dog or other animal will feel at hearing his master's voice, i. e. they did not rise above the emotional sphere.

6. With the advent of the first connected word other sections of the brain are drawn into activity and the intellectual powers receive their first stimulus. Its birth has never been explained to satisfaction. Sound may be physically analysed into air-vibrations, whereas the ultimate units of light are ether-vibrations. The former are carried to the auditory, the latter to the optic centre of the brain. Their association can only be accounted for on the assumption of some unconscious influence as a connecting link, for there does not seem to be any direct communication between the two centres. [1])

17. Wundt assumes [2]) that the visual and auricular images are fused together, that is they unite into constant associations, which he calls "Verschmelzungen".

The theory is based upon the fact that certain complexes of simultaneous sensory excitations are apt to result in one compound impression. Among the commonest instances are the "fusion" of different sound-impressions such as d, f, a, into one harmonious whole, and the composition of different tactile stimulations into a common resultant. These are called *intensive fusions* because they only intensify sensations that are intrinsically similar, without modifying their kind.

Extensive fusions, which include the component parts of words, and the associations of words to their meanings, consist of disparate elements of time and space, of emotion and volition. Wundt's views are based upon the general assumption that smell, taste, hearing and sight are specific senses, touch being a kind of substratum to all of them. Genetically touch is taken to be the first. [3])

[1]) Dr. E. Fröschels, Psychologie der Sprache, p. 27.
[2]) W. Wundt, Grundriss der Psychologie, § 16, 5.
[3]) W. Wundt, Grundriss der Psychologie, 15th edition p. 113, 127, 131, 274ff.

I would observe that word-thing fusions are never absolute, as their unity may be disturbed by brain-lesions or mental fatigue. Further, it is not the completed fusions that are the primary concern of the language instructor, but rather the fusing process itself, the growth and cultivation of language, spoken and written, within each individual pupil.

18. The first word marks the beginning of the specialization of the phonetic material. Convention commences to trammel the freedom hitherto enjoyed, and sound-development must henceforth be in the direction of the native speech. Yet, trammelled as it may be, there always remains some margin of liberty which constitutes the life of the language as regards its sound-aspect.

19. The first word may, or may not, be properly "understood" by an infant. In the great majority of cases it is not, i. e. the full number of the attributes designated by the word do not come to consciousness. Even adults rarely understand the whole meaning of a word. The relation between sound and thing may therefore be of the vaguest order. If *papa* happens to be the first conscious connection made, it is only a small part of him that is absorbed by the mind. He may or may not have enjoyed a certain preference long before his name was spoken. It is probable that his image was among the first to be implanted in the infantile consciousness, as also that it was mostly associated with sensations of pleasure. So much appears from the attitude to other papas, the sight of whom often evokes signs of hostility or fear. Those pleasurable sensations must be the first ones that the sight of his person or the mention of his name are able to evoke. And if associations could be converted into speech energy at that stage, there might be speech. But the associations

which his name and his person recall are a long way ahead of the reproduction of the sound-group. It is the reproduction that marks the new departure in mental activity. The word-centre begins to affect the innervation centre and to assume co-dominion with the other motive forces of the speech-apparatus, thus opening the way to a social intercourse of a much more important character than hitherto was possible.

It is at this stage that instruction in the mother-tongue commences. What was mere chance-work hitherto, commences to be organized activity. The moment a child is admitted into the family-circle and the cradle ceases to be its only place of abode, its social needs rapidly multiply. There are a few things in its surroundings that it may, and a good many things that it must not touch. Its whole environment changes to such an extent that attempts to make it understand the names and the nature of the things around become inevitable. But all sorts of complications will arise from the disabilities imposed by the mental circumstances of the infant. Names spoken to a child for repetition are often accompanied by gestures. But the gestures may be misunderstood. They are like words in carrying meaning, that is to say some intellective extension beyond the gesture movement itself. It is doubtful however if children at this time of life can tell a gesture from the thing indicated. In many cases there is confusion. The hand or the finger is looked at and not the desired object. The motion of the hand itself may cause amusement. A ring adorning any of the fingers, a pencil or fork or any other thing by means of which the gesture is made, may just at the critical moment when the name of the indicated object is spoken be in the focus of the childish vision and have the sound-value fastened upon it.

21. Hence misconceptions are very apt to arise. The following are among those that have come under the writer's notice, *plate* as a mistake for bread, or meat, or anything eatable from a plate; *thirsty* for water, milk and other drinkables; *water* for watercock; *scraps* for *serviette* (a most remarkable contamination!).

All the little community to which the child at this stage belongs are interested in rectifying these mistakes, and attempts are generally not wanting to adjust them, but some take long to cure, and others for the fun of the thing adopted by the other members, may be perpetuated in the family for years.

22. The above imperfections of infant speech are on the semantic side. Those coming under the head of phonetics are scarcely less remarkable. The "words" intended by little children as reproductions of those they have heard, often possess only the vaguest resemblance to these. Now in their passage up the auditory channel we cannot assume any modification of the sensory stimuli beyond such as may be owing to imperfections of the organic apparatus. Nor is it to be surmised that the physiological condition of the normal cerebrum would hamper the transmission of sound-stimuli to the motor area, where they are converted into speech-energy. This transmission, from what is observed in adults, must rather be taken to be more perfect than the best of telephonic apparatuses can achieve.

23. Whatever auditive image is presented to the mind must therefore be assumed to be the sound corresponding to the impulse received from without. Yet, though capable of exciting the vocal apparatus to activity, it is incapable of managing the organs of speech in such a way as to reproduce a copy of the stimulating word or sound-groep.

The discrepancy may be owing to children associating

more slowly than adults [1]), and to their consequent inability to adjust their, as yet, untrained organs of speech to impressions that are too volatile to be retained by them.

This matter is of some didactic value as proving that speech is not a mere echo, subject to the rigidity of physical laws, and that the acquisition of the art of speech involves associative and consequently mental processes which only time and practice can overcome. The same difficulty, though under different circumstances, is met with later on in the attempt to give the so-called "standard" sounds to speakers of dialect, as also in foreign language instruction.

24. A few examples will suffice to show how difficult is the repetition of words for beginners in speech, and how vast a difference there is between the sensation of sound-combinations and their conscious reproduction. A boy of three, backward in speech though of good average intelligence, pronounced the word *vader* (father) in the form *kaka*, the vowel being the only element of the word that survived the passage from sensation to reproduction. When in the babbling stage, *v*, *f*, *d* and *a* had often been produced by him unconsciously. In fact the combination *dada*, his shortening of *dag*, *dag* [dax dax], a common Dutch greeting, came from him with perfect ease. Yet, the new synthetic difficulty presented by the five sounds *vader* was too much for him to overcome. The first vowel came easily enough, probably on account of its being one of the neutral class and of its having been repeated thousands of times. *K* was one of his favourite initial consonants and the consciousness of there being some unfamiliar stepping-stone to the *a* led him to associate the two by way of substitute for the proper syllable. The

[1]) Brugmans, Psychologische Methoden en Begrippen, p. 169.

second syllable was evidently a mere reduplication of the first. — It was not till long after that the full combination came to consciousness and came to be produced, so that not only those about him, but also others, could understand what he meant to convey.

25. The little girl mentioned above in I. 14, in reproducing the Dutch word *blij* [blei], dropped the *l* and the second part of the diphthong, thus turning the word into [*bɛ*] although the *l* was a common sound before conscious speech began.

Lieve vader (*livə va:dər*, English: dear daddy) was turned into *lisə ta:tə*, the first *v* having *s* and the second *t* for a substitute.

Another little girl, on the other hand proved a much better speaker than either of the above three, almost hitting the mark at once be saying *fater*, the only change being in *v* and *d* losing their voice.

This short list demonstrates the fact that conscious speech is a more difficult undertaking than the spontaneous production of sound, that is such sound as does not involve thought or will activity and does not depend upon our social environment (compare 14).

26. The explanation is obvious enough. In the formation of significant words the child is confronted with the difficulties of exact reproduction. Specialization commences. Attention is called upon to guide the previously random muscular movement. Social requirements call for adjustment of the speech material to the „laws" or fashions of the community. Sound-reactions so far were nothing but voice manifestations [1]), accidentally modified by the playful movements of the tongue, mere reflex responses to

[1]) There must have been breathed sounds as well, that is noises in which there is no vibration of the vocal chords.

simple emotional stimuli. They now are turned into more or less conscious neuro-muscular performances of a much more complex kind, involving other areas of brain-activity.

7. Two difficulties now arise, the one analytic, the other synthetic, both involving a good deal of mental effort. The former implies the distinction of the sound-units proceeding from the speaker in their conventional order; the latter implies their reproduction in the same order. Since each unit, vowel or consonant, takes but a small fraction of a second to be pronounced, its recognition, that is its association with the sound-images which the earlier haphazard mouthplay has stored in the child's memory, may be too quick a matter to be successfully accomplished at the first attempt. These sound-images have not attained that definiteness and readiness of reproduction which the force of habit gives to the speech of adults. The *butə-butə* experiment (I, 13) shows that the application of a certain excitant is no warrant for the reproduction of its associative doublet, even if the memory indubitably harbours some trace of such a doublet.

8. Each sound-group moreover shows a definite order, which gives it a form of its own and will generally [1]) be reflected by its precipitation in the mind. When once the single-vowel-period is past, and vowels begin to form connections with consonants, it is in their connected form that reproduction is most likely to occur. Now the vowel *a* in *vader* is by far the most sonorous element and would therefore easily be associated to the sound-group *kaka* existing in the mind of the boy mentioned in 24.

The lad took quite three months to find the right delivery of the word *vader*. Long after he had mastered an isolated

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[1]) Generally, because metathesis is apt to occur.

f, the *k* would turn up with its attendant *a* as soon as the word *vader* was repeated to him. Then came such combinations as *ffff-kàkà*, habit being so strong as to re-instate the original mispronunciation. At length, by dint of practice the wrong form gave way to the conventional one, and *kàkà* fell into disuse. The *ffff-kàkà* stage showed the beginning of conscious analysis. The next stage was *faka*, which marked a considerable advance, obtained by having the combination *fa* repeated to him until he could articulate these two sounds conjointly. Here was not only analysis but synthesis as well. Our youngest daughter named Clara mispronounced her own name as *làlà*. The *r* was beyond her reach, but none of the other sounds was. Her first conscious analysis appeared in the form *kil-lala*. It took many months to teach her the right pronunciation, and when she was $2\frac{3}{4}$ years of age the two forms existed side by side in her mind, and there was no telling which form she would use when occasion arose.

29. While these exercises are going on, some thought-activity may be assumed on the part of the infant learner, who will look at his father's or mother's mouth (or whoever it may be) for a moment or two and then try and imitate the real sound. The pause and the following attempts at approximation of the stimulant sound prove that a new auditive image is finding its way into the mind and being compared with the existing association. True, the new association with its resultant movements of the voice-apparatus, through frequent repetition grows into habit and comes to be unconscious, but its history is of the utmost didactic value, because it shows beyond any doubt that the acquisition of unfamiliar words, the co-ordination of unfamiliar sounds, is very rarely a matter that goes without thought. The experience of foreign language instruc-

tion, as will be shown later on, confirms this view. Voice-production may be spontaneous, sound-co-ordination is not. No word mispronounced at the first attempt is likely to fall into line with the standard language unless the speaker in some way or other is made conscious of its formation. Consciousness may be stimulated by the child's environment, aided by the social instinct. In many cases there is no need for any specific instruction, as long as the environment continues the same. Even if a child is transplanted into other surroundings, its natural aptitude for learning languages may be such as to obviate the necessity of special tuition. But this is only for the gifted few. The great majority require to be taught, and the amount of time and energy expended by mothers and fathers, brothers and sisters, nurses etc. is grossly underrated by those who hold that the normal child will develop speech spontaneously, as it does the art of crawling and walking about. It takes a good few years to make the average child fully conversant with the habits of speech of its own family, i.e. with the management of its vocal apparatus and its adjustment to its immediate social demands. It takes many years to acquire a full command of the language of that greater linguistic unit of which its family is but an atom.

10. As the scope of sound-arrangement is practically infinite [1]), and human capacity limited, specialization of the phonetic material is inevitable. For if there is to be communication of mental contents from one person to another, the liberty of either party is conditioned by the other. We are certainly free to talk Russian or Japanese to those about us, but no interchange of ideas can be effected unless the speaker and the person spoken to understand

[1]) According to the 1934 report of the British and Foreign Bible Society the Bible has been translated into 678 languages.

what ideas are associated with the sounds that act as intermediaries of thought. Since the mother's speech (whether „standard" or „dialect") is in the great majority of cases the only available means of communication, it is impossible to escape from the mother-tongue in early childhood.

31. The establishment of communication, however, is not so easy a matter as the laying of a telegraphic communication between two persons who are miles apart. In the latter case the medium (a cable or wire) is ready-made and only the installation of the apparatus is needed to start "talking". In the former the physical intermediaries are air-waves generated by the speaker and reacted upon by the hearer. Not only the generation of these waves involves great difficulties for children, but also their identification, and the meanings they are intended to convey. A few sound-distortions were incidentally noticed in 24 and 25. Some misconceptions of the conventional meanings of sounds, which arose from the child's attention being fastened upon the wrong object when the name of the object was spoken, were mentioned in 21.

The confusion of sound and sense is a matter of faulty association. The distortion of sound is both an associative and a motoric matter. Defective hearing must be held responsible to some extent. One cannot ask a baby to find out whether that is the real reason, but one is driven to that conclusion from experience with adults, whose faulty hearing is very often responsible for defective reproduction. But even if there is no question of defective hearing the synthesis of sounds prevents difficulties. The fact is that most sounds enter into partnership with others, and are readily transmitted by the motor apparatus when so frequent as to develop habit. But if *vowel* + *consonant* is readily produced, it does not follow that the reverse order *consonant*

+ *vowel* will come with the same ease. The fact is that motorially speaking, the combination is an entirely different one, involving neuro-motor activity of a different order. The transition movements from *t* to *i:* in *tea,* are the reverse of those from *i:* to *t* in *eat,* hence the nerves and muscles governing the two movements have to be manipulated in different manners.

An interesting case is that of a Dutch girl, who could say *us* and *usje* (*əs* and *əsjə*) with perfect ease, but could not say *zus* (*zəs*) or *zusje* (*zəsjə*), always leaving out the initial consonant.

How strongly the order of our sound-associations influences their joint reproduction is easily tested by saying the alphabet in inverse order. The usual way takes no more than 7 or 8 seconds to perform; the wrong way about, from *z* to *a,* it took six boys 45 seconds on an average. Anyone trying to reverse such a familiar group as *sing a song* will note the peculiar difficulties involved in the process.

52. Other difficulties are those arising from analogical sources. A little girl, whose first impression of a quadruped had been derived from the sight of a dog, and who had her first association revived by the observation of a cow passing by the window, was heard to exclaim: "What a big dog!"

A boy on the other hand, whose first sensation of a quadruped had been excited by a cow, vented his surprise at seeing a horse by calling it "a funny cow". In passing we may note that the word *funny* is suggestive of comparative activity, the consciousness that what he saw differed somehow from the mental picture hitherto styled *cow.*

A third beginner, whose notion of insects had been gathered from a butterfly, mistook a bluebottle wheeling about the room for one.

Another remarkable case is the exclamation of a boy

when he saw his father moving the cover of a book, with the book in a perpendicular position. The boy was struck by the similarity of the moving cover to the more familiar sight of a door turning on its hinges, and exclaimed "door, door!"

Wandeling, the Dutch for *walk*, was corrupted by a girl into the monosyllable *wau*, and came to denote anything out of doors, the garden and the streets generally.

33. The above examples will suffice to show that the first infantile notions are of a very general kind. It takes a good few years before all the attributes designated by the little word *cow*, are duly stored and differentiated within the mind. They are gathered one by one, partly from observation, partly from what is said about cows. The important part played by this horned quadruped in human economy will not become clear to the infant mind till much later. I have actually heard a little girl in one of our towns declare that milk was supplied by the milkman,[1]) and that only farmers got it from cows! Differentiation cannot be completed except by comparison, i. e. by an act of thought.

That is how horses, dogs, and cows come at last to stand before the mind's eye as distinct units.

34. Introspection shows that only one or two attributes of a quadruped can stand in the focus of attention at once. If the eye travels from the head to the hind-quarters of a horse, the head will fade away into the border of the field of vision, and disappear altogether perhaps. One may be so near in fact, and the angle of vision consequently so great, that the retina cannot take in all the rays of light emitted by the whole of the animal.

If one imagines a horse, the same difficulty is experi-

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[1]) Compare VI, 4.

enced. Or look at the picture of a horse in a paper and centre attention on the mouth. The eyes and the mane will immediately disappear. At first sight the retina is struck by all the points within the field of vision, but one of them is singled out for closer inspection. It may be an involuntary act, it may be a voluntary one; involuntary in the case of "picture-reading" in books or papers, voluntary in the case of an intending purchaser examining a horse from head to tail, legs and all in order to discover possible defects.

5. Now, mental images take some time to cross the field of consciousness. Their appearance may be spontaneous, caused by some unconscious associative stimulant, but they must abide for some measurable time if they are to be conscious. The time varies in different individuals. The after-effect of sensory stimulation is small in the more volatile class of persons and never very notable in any, running at best into a small fraction of a second. But it is measurable and the conscious revival by the imaginative powers of all the points of a horse, would take more time than the mere mention of the sound-group *horse*, which it does not take the average speaker more than three tenths of a second to produce, speaking with moderate quickness.

Since every attribute by itself is applicable to a great many animals, and no one attribute is therefore capable of creating within the hearer's mind the desired picture, it may safely be said that in the case of such a complexity of attributes as that denoted by the words *horse, cow*, etc. there is not and cannot be any direct indication of any particular point, and yet what is meant by the word is perfectly clear.

6. Take the case of a camel. The very natural question by

a child on hearing the word for the first time, is: "What's that, a camel?", which calls forth an explanation on the speaker's part, who has to describe the camel, so as to build up in the hearer's mind the proper idea. Words are scarcely sufficient for the purpose. Some picture or other representation is added as a rule to assist the auditory organs in constructing the required mental picture. Once obtained, however, and by the further process of apperception duly engraved upon the mind, the idea "camel" sinks into the unconscious store of memory, and the word *camel* is associated with it, fastened on to it, so to say, to serve as label, somewhat on the analogy of labels on medicine-bottles in a chemist's shop, useful in distinguishing the contents of the bottles one from another, but having little signification of their own.

37. Words therefore, unless circumstances call for elaborate explanation, may be said to be mere vocal signs serving the purposes of thought and speech in much the same way as visible signs are used in algebra and elsewhere in mathematical and physical sciences. The symbol x can be made to stand for a great many values. Personal pronouns come nearest to algebraic symbols in value, marking as they do an indefinite number of persons and things. But even full words, like *cow, tree, steamboat, blue, bitter, sweet,* are likewise sound-marks denoting whole classes of substances and attributes.

It follows that words are great aids to thought and to the interchange of thought. But for this potential energy of words both thought and speech would be laborious processes, entailing the recall and expression of a sufficient number of attributes to enable the hearer to identify the person or thing spoken about, a common enough experience when conversation is in a language not familiar to either

speaker or hearer and some such periphrase as *"white, big swimming-bird with a very long neck"* is substituted for the simple word *swan.*

38. The above has some didactic bearing upon foreign language instruction, inasmuch as it proves that the shortest cut to explaining unfamiliar words is by mentioning their native equivalents.

It is the above potential energy that enables the human mind to fill a word with a great variety of elements, as in *danger, honour, love, flight, anthem;* to add to or deduct from the contents of a word by the process of association, as in *hearse,* which at one time denoted *harrow* and arrived at its modern signification by a long train of associations of place and resemblance; to use different forms for identical things, as French *vache,* and German *Kuh,* for English *cow;* to use similar forms for different things, as in the many homonyms, such as *tale* and *tail* within one language or English *heart* and Dutch *haat* (hate), extending over two languages.

39. Chaucer's *schoures,* pronounced *ʃu:res,* and *droghte,* pronounced *druxt,* are among the great many instances of words changing their sound-forms while retaining their meanings. We must therefore conclude that sound and meaning, closely associated as they are, are each of them capable of independent development, and of meeting with new associations on their way.

It may finally be observed that whatever the adventures of such a word as *hearse* may have been in previous centuries, the average Englishman knows it only as a "car for carrying coffin at funeral" (Concise Oxford Dictionary) and lives in complete ignorance of what it used to denote.

Hence it is possible to examine the phenomena of modern languages in their own light, apart from historical associations.

CHAPTER II.

SOUND AND SENSE.

1. There is no distinct line of demarcation between the period of inarticulate sound, the period of empty words, and the time when larger complexes of sound come to be bodily repeated. Tho second stage is evolved from the first, as the third is from the second, almost imperceptibly. Either form of voice-activity, except for being symptomatic of the growing social instinct, may be devoid of meaning, sense (or meaning) being only gradually instilled as the intellect awakens and expands.

2. Full words are expressive of associations between percepts of sound and percepts of things. [1])

The percepts themselves are items of consciousness; their mutual association is the result of unconscious mental activity.

The associative activity begins where the sensory process ends. The union effected in the mind between percepts of sounds and things is a psychic one.

The word *thing* is to be interpreted in the widest sense of the term, embracing everything that may be made the subject of thought.

It therefore includes not only purely sensory units

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[1]) Even relational words, such as copulas, auxiliary verbs, prepositions, pronouns and conjunctions are ultimately based upon the perception of things and sounds, the perception of two or more things together, that is, viewed under different aspects of predication, space, time, etc. — Compare Ch. IV, 1.

such as *house, sound, music,* but also relational units such as *shall, and, on, the,* etc., which may each of them be employed as the subject of a sentence, e. g. *"Shall" is one of the auxiliaries of the future tense; "And" is a conjunction; "On" is a preposition; "The" is the definite article.*

3. The psychic forces of the mind are ultimately responsible for the birth of sentences, as well as for the birth of words. But a word is merely a contiguity association between a conscious auditory sensation and some other idea that may or may not be represented in consciousness, whereas a sentence is much more than that.

4. The word *to stop* involves the sensation of half a dozen sounds, associated with the idea of cessation of movement. This is also what the word *stopped* conveys in such a sentence as: *His heart stopped beating.* But in the imperative: *Stop!* — much more is implied.

5. The sound will awaken in the hearer's mind, providing that English be his native speech or understood by him, the notion of cessation of movement. But with the revival of the cognitive associate of the sound-group *stop,* a simultaneous touch upon the emotional associates is produced by the peculiar intonational attribute of the word, which is different from that of *stopped* in *His heart stopped beating.*

As the word *stop!* enters the mind of the hearer in the whole of its intonational timbre, that is to say, as the cognitive and the emotional aspects of the word are recalled by one sensory experience there can be no question of either taking precedence of the other chronologically speaking. Both notions, that of stopping and that of command, are taken in together by the receiving apparatus of the hearer's mind. If a differentiation is made, therefore, it is one that exceeds sensory experience.

6. The word *stop!,* then, conveys both a command and the

purport of that command, that is, it carries both a volitional and a cognitive value. But the associative process does not end here. For the recipient, in the majority of cases, will know himself involved (or fancy himself involved in case he is a casual hearer), and even if he cannot see the person giving the command, he will conclude that some such person is near. He may, if he knows the voice, be able to infer who it is that is thus addressing him.

7. There may be inferential activity in the recognition of the word itself. Owing to its greater sonority the vowel *o*, with its initial and final modifications may be audible when the other sounds are not. In such cases, not by any means infrequent, the word *stop!*, apart from the circumstances under which it is used, shows no sensorial difference from *top* or *pop*. Yet the mind will register it as *stop*, and prompt the person concerned to desist from the action he is engaged in.

8. By means of the term *Stop!* a relation is therefore established, between two persons. *To stop* expresses only a single unit of thought, whereas *stop!* embraces more than that. *Stop!* is a sentence, *to stop* is not.

The effect of the different intonations of the Infinitive and the Imperative is more striking in Dutch than it is in English, because the Dutch word *stoppen* may be used either as an Infinitive or an Imperative, the only difference being a variation of pitch.

9. *Run!*, *Fly!*, *Jump!*, and a great many other words may be dressed in the same intonational sound-waves as *Stop!* Yet they convey entirely different verbal notions.

It follows that intonation by itself is unable to tell the hearer what is in the speaker's mind.

The voice-murmur ə, in fact any voiced open sound may be pitched like a command, a question, an exclama-

tion or a statement. They may establish a preliminary connection between communicator and communicatee, but they cannot as a rule evoke the required response. They are mere rings of the telephone, but not messages in their own right. They just call the recipient's mind to attention, but do not communicate what he is requested to do, nor what he is to be told. The information may be mentally gathered from the circumstances of the case, it is not mentally deducible from the sensory stimulation as such.

Speech can be stripped of all that it possesses of vocalic quality by stopping the vibration of the vocal chords. The words are thereby reduced to whisper. [1]) The intonative power, in so far as it depends upon glottal vibration, is lost and only the tongue and the lips are left to modify the pitch of the sounds. The carrying-power of the sounds is greatly impaired, but their power of communicating logical items remains intact. A whispered message to one within hearing is as readily understood as a spoken one. This shows that speech in its logical aspect is more or less independent of the action of the vocal chords.

Though whisper is unable to convey the ordinary shades of emotion owing to the non-co-operation of the vocal chords — which produce whatever there be of "*music*" in speech —, it should be borne in mind that it may have its audibility and its duration varied, in much the same degree as ordinary speech is modified, by the more or less forcible management of the breathing apparatus with its attendant agents active and reactive. Hence a whispered *Do!* or *Don't!* may be brought forth with the same strength and the same abrupt or drawling utterance as

[1]) This is the reverse of what happens in earlier periods when the action of the vocal chords precedes that of the tongue in the formation of sound.

its fully sounded equivalent, and produce the same impatient or persuasive or exhortative mental note. The persuasion, exhortation or impatience is in this case inferred from the action of the superglottal agencies of the word, which, being commonly associated with the laryngeal ones in communicating emotion, are sufficient by themselves to create in the hearer's mind the same mental content as the fully sounded term would.

Such is the case even when darkness makes it impossible for facial and other muscular utterances to be seen.

12. The audibility and the length of a word may be reduced, but can never be eliminated; their reduction to nothing naturally destroys the word and destroys communication with it.

The written language, however, discards every sound-element, the visual sense being the only one directly stimulated by means of print characters and certain other symbols, such as marks of exclamation and interrogation.

If, notwithstanding this, the written language can instil all sorts of emotions, it can only do so by associations in the second remove, the visual signs being first associated with the auditory ones, and the latter in their turn with the mental contents they represent.

Now the association of the optic and auditory units is an act of the intellect and there can be no complete response on the part of the communicatee until this act is completed.

Non-understanding or imperfect understanding causes waverings and hesitations and requests for explanation.

As both in whispered speech and in print the glottal element is dispensed with and the emotional left to be mentally inferred, there can be no doubt that the cognitive aspect of words can be communicated from one person

to another without the assistance of the vocal chords.

In fact, in signalling and semaphoring, in ciphers, telegraphic codes etc., all sorts of symbols may be arbitrarily compounded for communicative purposes.

3. Besides their own independent existence in the mind, every emotion and every form of will have names in the cognitive sphere. Love, hate, anger, jealousy etc. are groups of sounds standing for certain emotional phenomena, yet they are not naturally suggestive of emotion.

That is why wishes, commands, and questions introduced by interrogative pronouns, can be communicated on the same intonation-curve as plain statements. *I should like you to go* can be produced with the same pitch as *Three times seven is twenty-one, I lost my father yesterday* just like *You go and get me my boots, Peter; Who said so?* just like *He said so.*

The psychological processes expressed in these sentences and the human interests they contain are widely different. Yet the intonation curves are identical.

It follows that communications, intrinsically different in emotional aspect, can be made without any differentation of pitch.

4. Different sound-curves may, conversely, be used to express identical mental contents.

Within such a comparatively small area as Holland represents, there is a considerable variation of intonation both in words and sentences. Welsh speakers of English, even those whose mother-tongue it is, have a kind of sing-song intonation all their own. French differs from Dutch, and Dutch differs from Scandinavian in the expression of identical relationships between subjects and predicates.

This shows that intonation is a conventional matter, adopted from one's surroundings and not a natural endow-

ment. Exclamations, and questions that may be answered by plain yes or no, whose very life depends upon their intonation, are not naturally understood by children.

A certain retarded boy came under the writer's notice some years ago who never understood a question properly until he was about six years of age. His reactions upon questions were all of a reiterative kind, mere echoes and nothing more. Sarcasm is even longer in developing, I believe.

15. If we just remember that pitch, being the rapidity of the sound-waves, is one of the inherent qualities of all sound, and therefore unfit to express modifications of meaning, but that intonation is a relative term, referring to the relative frequencies of the vibrations and therefore capable of being used for the purpose of differentiating shades of meaning, it is easy to understand how both the emotional and the intellectual faculty may enlist it into their respective services. Intonation may assume the force of a negative. If the exclamation *What a beautiful day!* is uttered in a sarcastic tone, the meaning of *beautiful* is turned into that of its opposite and the phrase becomes equivalent to saying *What a dirty day it is!* the intonation serving the double purpose of negation and emphasis, the former being logical, the latter emotional in character.

16. It is not surprising therefore to find that Chinese employs intonation for making distinctions that are purely logical. What would seem to be symptoms of interrogation, surprise and annoyance respectively to a European ear, may be distinctions marking real semantic differences. The word [tʃi] for example can stand for *branch, price, paper* or *wisdom* according to its intonation. [1])

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[1]) A. Seidel, Kleine Chinesische Sprachlehre, III, 20.

The above is sufficient to show that the intonational qualities of speech are very largely a matter of convention. Indeed emotional and non-emotional speech is apt to cause misunderstandings, through ignorance on the part of either speaker or hearer, or both of them. If the speaker's language is more lively from habit than that of his hearer, the latter is apt to think the former's speech exaggerated and insincere. Conversely an even-spoken man is apt to make an impression of coldness and indifference on those whose speech is naturally more excitable. But whatever the emotional and intellectual aspects may be to aliens, the total is a stable value within every speech-community, and no analysis of meaning is possible unless the word can be duly associated with its corresponding mental image.

Now this image can be retained only by the cognitive faculty and it is therefore useless trying to kindle or revive it by an appeal to the emotional only. For any such appeal must fail in the absence of a mental connection, or of the recollection of such a connection.

Byron's complaint that he was made to understand and not to feel Horace's "lyric flow" was hardly to the point, unless a person were to be satisfied with the same sort of impression as infants receive when having things read to them. This kind of feeling, as far as traceable, consists in mental reactions to the metrical beats of the sound-waves on the tympanum, which is bound to produce that rhythmic sensation which is one of the fascinating elements of verse, apart from the logical and emotional elements. Infants will smile to any nonsense rhyme.

As regards its untraceable mental aspect it is worth observing that some animals display unmistakable signs of pleasure or displeasure at hearing music, in much the same way as human beings do. But the reactions we feel at hear-

ing a statement that we understand, are of a more complex kind. *I love you* and *I hate you* may be uttered on the same intonation curve.

According as the voice that says it is musical or not,we react immediately in a pleasurable or unpleasurable manner, just like a dog or an infant. But the full contents of the two statements are matters of secondary association: love (sound) — love (thing) — mental agreement or disagreement.

hate (sound) — hate (thing) — mental reaction.

What Byron meant by *lyric flow* is probably the intonational and rhythmical associations of speech. [1]) They are immediate or primary reactions, and the others, being of the intellective kind, are apt to overshadow the aesthetic beauty of poetry if too much emphasized by the teacher. [2])

18. Now it is the secondary associations that give trouble in teaching. *Generosity* and *animosity* show the same metric figures. Shakespeare's decasyllabics strike the same cadence of rises and falls upon the ear, whether alien or English. The music of Edgar Allan Poe's *The Raven* never fails in its effect upon pupils even if they understand but two thirds of it.

Gray's "Elegy" will affect all those endowed with any poetic sense although many words require explanation.

Nobody is likely to deny that pupils ought to have their full allowance of poetic emotion. They ought to be given time to read and re-read until they have their fill

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[1]) "Then farewell, Horace; whom I hated so,
Not for thy faults, but mine; it is a curse
To understand, not feel thy lyric flow,
To comprehend, but never love thy verse."
Ch. Harold IV, 77.

[2]) Byron's complaint probably refers also to the unneccessary worry of grammatical analysis when carried beyond the requirements of the moment.

of poetic beauty! But the full measure of the poet's emotion and the scope of his imagination cannot be realized, the heights of his idealism cannot be understood but by the aid of human thought. Nor can the cultural element be fully appreciated if one neglects to refer the symbols seen and heard to the things they represent.

It is difficult enough to follow native poets in their flights, it is a hopeless attempt to follow foreign ones. Byron probably desired to read Horace as he read Southey and Wordsworth. He very naturally failed in the attempt.

Words, then, must be perfectly understood by both the communicator and the communicatee before they can be properly used for the purposes of intercourse.

The mastery of one's native vocabulary is a matter of many years. The first associations, as stated in I 24, are of a defective and often of a faulty kind, i. e. not in keeping with the common acceptation of the words. A word may be in the mind for years and years before its real content is grasped. A friend of mine told me that he never knew the meaning of the Dutch *onstuimig* (English *boisterous*) until at the age of twelve he was taken across the Zuyderzee and heard some passenger say to another that the sea was rather boisterous. Then it was that the union between sound and meaning was effected in his mind.

This may be called an instance of involuntary association, in which the intellect takes the leading part, feeling and will being passive. What my friend observed was the state of the sea and the word *boisterous* as applied to it by his fellow-passenger. The association of the two was an intellectual act, the reverse of those earlier experiences in which the image of a thing preceded that of its associated word.

The majority of the infant's connections of words and

their meanings are probably brought about by experiences similar to the above. Whether the thing itself or its sound-associate precedes, there always is a flash of consciousness when the association is effected. Yet the manner is not always the same. There are many instances in which volition takes the leading part. Such is the case in those multitudes of questions asked by children concerning the signification of words. The first step in the process is mostly one of abstraction. The words are heard in connected speech. But the simple sentences in which they are heard are phonetic units, just like simple words. *Come here!* does not differ metrically from *severe.*

If some such group as *Come here!* is unfamiliar, the want of information will be felt sooner or later. No questions are asked as a rule, until the need of enlightenment comes to be felt, many words being repeated parrot-fashion until it dawns upon the mind that they have some meaning.

Here are a few questions. What is *dirty* dad? (Clara, aged 3). What is *body* dad? (a boy of 5). What is *durable?* What is *generally* (a girl of 8). What is *obedient?* (a boy of 9).

It is clear that there must be some antecedent sense of the unknown to prompt such questions, this sense, which is of a negative character, following the observation of the word and its abstraction from the context. What prompts the speech apparatus to action is the desire to know the missing link so as to complete the mental imagery in the cognitive sphere.

21. One of the most remarkable instances of a conscious connection being laid between a word and its meaning is the following conversation between little Clara, when just turned three and her mother. In her earliest prattling stage she used to style herself Lala, which later on improved to Kara. Then the pronoun *Ikke* (Dutch *ik* =

English *I*) came to be adopted, and was occasionally employed instead of Kara. The second person *jij* (pronounced *[jei]*, Dutch familiar form for *you*) had likewise dawned upon her understanding and seemed to have been vaguely felt to be connected with herself.

One evening as she was being put to bed and chattering away as infants will do, she suddenly came to a dead stop: "Ikke?" she said, "who is *ikke?*" Then suiting gestures to her words she pointed her finger at herself, saying "Is it *you?*" — finally passing her hand down her body from her head to her feet, adding. "Is it this?"

Here was one of those flashes of conscious activity which alone can fuse two mental images into one. The fusion may be instantaneous or may take some time to complete, but words never get their proper filling without it.

2. The following bits of infant speech were chiefly produced by cognitive stimuli.

Annie (2 years and 7 months), surveying the ocean from the deck of the steamer that took her to England. "House all gone."

Annie: "Mother look for key? Annie know key." — A key had got lost. Annie walked out to a plot of grass about forty yards off and returned with it.

Clara (2¾ years), removing toy perambulator from before the front door: "Otherwise daddie cannot pass."

Clara: "When I go to the park with mother, I cannot see the house."

Clara: "Dad has dirty hands, dad must wash his hands."

The general rule, which she evidently remembered, was "Dirty hands want washing." Seeing her father's dirty hands she promptly drew the inference.

Clara: "Then was doggie, then was Chip (her designation of the sempstress), then was Kara." — The statement was

a regular paratactical one, with due breaks between.

Gerhard (4½): "Why is grass always green dad, and why is water always wet?"

"Suppose I stand on top of that tree, can I lay my hand on the moon?" — The moon was rising above a wood at the back of the house.

Menco (6½): Seeing a duck, declared to be a wild duck by a friend of his: "That isn't a wild duck, for uncle Ted has some in his pond like that."

23. Intellectual and volitional activities are combined in the following examples.

Clara (3), hearing the water running from the tap into the washbasin, the bedroom being dark: "Lala also water!"

Sensorially there was only the noise of the running water she could hear, which after being associated with the water itself, prompted her to ask for some.

Clara, finding her tumbler of milk empty, to one of her sisters in a tone of grave annoyance: "My tumbler is empty, you drank my milk!" [1])

Clara: "May I have dad's pudding when dad has eaten it all?" Taught by former experience, she meant to say: May I have the rest of your pudding, dad, if you cannot eat it all.

Menco (6½): "My old boots are so tight! Do I get new ones to-day?" The observation of the tightness, the annoyance resulting from it, the desire of new boots and the reason of his asking for new boots are all crammed into these two sentences.

24. Chiefly volitional are the following utterances:

Menco (when 3), "Mammie! quick! garden-rake! catch moon for Menco!" — The underlying cognitive elements

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[1]) Compare VI, 4 *d*.

are easy to trace. There must have been some knowledge of the garden rake, and some previous experience of its being used for the purpose of pulling things down from trees.

Menco: "May I come and see uncle this morning?" He was talking to his uncle; *this morning* was a synonym for *to-morrow* [1]) and embraced all his notion of futurity.

Margaret, finding her mother engaged in dressing the bruised knee of one of her brothers: "I bruise too!" Bruise was as yet a word she did not understand. What she wanted was probably an ornamental rag round her knee, the same as her brother had.

Clara, making a row in her little cot: "Annie come! Annie not kiss Lala!" — Annie had neglected the final performance of kissing her good-night.

What the exact relations are between the cognitive, the emotional and the volitional faculties of the mind it is for psychology to decide. But the above examples go far to prove that the cognitive element is never wholly absent in speech, and that it may even take the principal part among the stimuli that work together in the construction of a sentence.

Every infant utterance therefore cannot be styled an emotional, nor a volitional phenomenon. Suppose an infant is shown a number of photos and asked to name the persons they represent. The names, if he or she is in the proper mood, will come one by one in their crude baby forms. There may or may not be some intonation indicative of mood in the expression of the names. If there is not, the answer is a mere associative sound denoting recognition and nothing more.

Let us take another example. Suppose a young boy is

[1]) Dutch has the same word for *morning* and *to-morrow*, the context being decisive for its meaning.

called upon to show the different parts of his head. In reply to *Where is your nose?* he will perhaps point his finger at the organ referred to. He may even, when requested to do so, indicate his father's or his mother's nose in the same way, long before he is able to produce the word *nose*. One instance I have on record of a girl aged six months, who in the midst of a company of friends was asked to say where her father was. The little eyes moved round the circle of visitors one by one until they rested on her father's face and smiled.

26. Now, which of her faculties, ought to be awarded the claim for priority? Was it volition, emotion or cognition? Was it only a desire to see her father that made her move her head, and, having found his face, produced the smile?

Granting that the wish to see him prompted the psychomotoric process resulting in her moving her head, the further question rises as to what it was that stimulated or revived her desire. This must have been some recollection of her father which, being awakened by the mention of his name, produced the smile of recognition.

Hence the mental associations came in the following order: father (sound) — father (thing) — recall of sensation of pleasure — desire for the repetition of this — psycho-motor action — sight of father's face — pleasure at seeing him — psycho-motor action — smile.

So we see that the emotional and the volitional were dormant in the mind till called into action by the sensory act of perception.

27. Linguistic controversy hinges more or less on the question of priority, and as this question has invaded the field of foreign language instruction, it is worth while advancing a few facts that may throw further light on the matter.

Those who claim priority for the emotions and the will

should bear in mind that emotions cannot be stirred by outside stimulants except by means of the senses. The sight of a poor decrepit beggar may fill us with pity. Which is it that takes precedence, the recognition of the beggar's plight or the pity? The sensation created within us is due not only to observation, but also to deduction. The visual apprehension has no power of its own to excite compassion. If it had, we should always feel it when the optic nerve is excited. If sympathy is kindled it is therefore not due to direct stimulation of the optic nerve but to comparison of the man's appearance with that of other people, from which it is inferred that he must be necessitous. When there is no such comparison no sense of charity is likely to be awakened. It is only when there is some familiarity with distress and its attributes that distress can be concluded to. Distress is frequently assumed when there is more prosperity than many honest labourers can hope to attain to. This very fact of our liability to error proves that emotional processes are distinguishable but not distinct from cognitive ones. If they were distinct, there would be compassion on cases known to be shams and impostures.

8. The most conclusive evidence of the correlation between the emotions and the cognitive powers, in matters of observation [1]) at any rate, is in the fact that there can be no emotion when there is no observation. The blind cannot feel the thrill of plastic beauty, the deaf are inaccessible to that of sound. If sight were the only medium between a beggar and the passers-by, there could be no "dint of pity" within a blind man's soul. Once roused, emotions

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[1]) As distinct from a general inclination to charity inherent in a man's character and prompting subconsciously the charitable deed.

are apt to assume control of the psycho-motorial mechanism of speech and action, swaying the powers of thought and will into their service for the accomplishment of any purpose on which the mind may be fastened, whether for good or evil.

Sympathies and antipathies and all other forms of prejudice [1]) are thus liable to pervert the understanding, entangling the judgement in a labyrinth of suspicion and insinuation, and forcing speech and language into the service of falsification and deceit, poisoning the relations not only of individuals but of communities and nations. For whenever passion and reason clash, the former generally proves the stronger of the two. If it were not so, international affairs would not be where they are.

29. Allowing this to be so in matters psychological, economic, national or international, it does not follow that in the linguistic sphere there should be subordination of logic to emotion and volition or vice versa. In fact between two such extreme sentences as *One plus one makes two,* and *Go to blazes!* — the one chiefly logical, the other chiefly emotional in aspect — the interdependence of psychic powers is easily seen. There must have been observation of things around, and a clear distinction of oneness from twoness before the first statement is capable of being grasped by the understanding. There must also be a memory of the sounds *one* and *two.* But there must be a feeling that the statement is true, before its contents can be said to have become our mental property.

The matter can easily be demonstrated if we look at some concrete calculation. Suppose one has to pay a shop-

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[1]) Prejudice in the sense of "an unreasonable predilection for, or objection against anything". Webster's International Dictionary.

keeper 8½ d., 1 s. 5½ d., and 2 s. 9½ d. for three purchases respectively, one is not inclined to pay up until satisfied that the three items total 4 s. 11½ d. In case of doubt one does not pay up. It is the mental assent that moves the will to pay. If the shopkeeper says that $8\frac{1}{2} + 17\frac{1}{2} + 33\frac{1}{2} = 59\frac{1}{2}$, one is not satisfied until his computation has been checked and found to be true.

In *Go to blazes!* on the other hand it is the logical that plays a passive part, which consists exclusively in the recollection of the expression with the mental content it conveys. But if memory fails in supplying the right word for the right emotion there can be no expression of such emotion by means of speech-sounds.

30. Traces of thought-activity occur at a very early age. A common nursery experience is for a toy to be accidentally moved over the edge of the baby-chair and to drop out of sight. The first disappearance of the thing will produce the customary vociferation until it is returned. But if the infant's experience of the object dropping and returning is repeated two or three times, its attendants are presently made partners in a sort of drop-and-pick-it-up game. Baby has discovered a way to manipulate the law of gravitation for the pursuit of pleasure. Its first accidental experience is consciously reproduced.

31. Performances like the above are common enough with infants in the prattling stage, long before the first articulate word crosses their lips. The cognitive part in the proceedings, the combination of cause and effect, is undeniable. The movement of the hand is not prompted by any physical need or instinct, such as that which impels cattle to move the covers off their water-tanks when drinking. Here is a further aim which can only be explained by reference to the higher faculties of the mind. These

form an indispensable link in the chain of events, without which the doll (or whatever toy it may be) continues in its state of rest upon the top of the baby table.

The game began as follows. There was an accidental movement of a hand or an elbow across the table. The doll rolled over and disappeared. Its disappearance was observed and reacted upon in cries. Somebody picks up the doll and returns it. It is observed once more. Recognition brings joy. Laughter follows tears.

The sensation of fun at the recovery of the precious object then becomes the mental agent in the encoring of the scene, the reproduction of which shows that the details are still in the mind. The will is acted upon to start the motor process which ultimately moves the hand against the doll, judgment leading the way to causing it to fall again.

Indeed, here is something suggestive of that "Gesamtvorstellung" which Wundt has made the basis of his famous sentence-definition. [1]) Only, there is no speech. There is noise and "behaviour" in plenty, but there are no speech-reactions on the part of the infant.

32. In the following little pantomime premonitory symptoms of thought-activity will also be found to be in evidence. On her dad coming home one day, a little girl, scarce eighteen months of age and having just begun to toddle about, proceeds to pull his boots off, making a pretence of doing so at any rate. Then going to the wardrobe where his slippers are kept, she gets them out and prepares to put them on her father's feet. This done she climbs his knee and coaxes him for a song.

Having witnessed the performance before she now began

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[1]) W. Wundt, Die Sprache, 3rde ed., p. 248.

to make herself one of the actors. Her wish to revive the pleasure of a ride on her father's knee and the innate imitative social instinct must be held to be the ultimate motives of her action. But her general desires required the touch of a specific cognitive sensation to stir her into activity. If her sensory apparatus had been struck by the appearance of a stranger, her reactions would have been different. The said performance was associated with her father's getting into the room and sitting down in his accustomed seat. Not a single item of the performance was omitted, which commenced by her tugging at his boot-laces. Her "language" was chiefly gesture-work, with plenty of inarticulate grunts and noises but none suggestive of either boots or slippers.

As her ultimate object lay a good many stages ahead of the initial steps taken to achieve it, there obviously was subordination of action to thought, in so far as her acts were made to follow the regular course of the events recalled by the sight of her father's entrance.

3. Another early symptom of cognition is the operation of associative activity of which one instance was casually mentioned in II 25. As a rule there is no hesitation on the part of infants to tell where other people's noses, mouths, eyes and ears are when they have come to understand the names of these parts of their own bodies. With equal readiness they will tell even the various parts of dolls' and animals' bodies when asked to do so.

Now the names they are actually taught are only those of the body of one human being, generally their own. Their recognition of the same features about other people, and their association of these features with the sounds applied to their own, are mental acts in which emotion and volition are wholly in abeyance. As stated in II, 25, this is quite

a common occurrence, long before the first word of conscious speech is spoken by an infant.

34. The strongest argument to prove the co-operation of the cognitive faculty in speech processes is that furnished by the experience of foreign language instructors. No matter according to what method instruction is given, the learner is at every step confronted by semantic and syntactic difficulties that cannot be solved but on cognitional lines. These difficulties will be treated more in detail later on.

CHAPTER III.

IS SPEECH A REFLEX OR A CONSCIOUS INTELLECTUAL AND VOLITIONAL REACTION?

1. The primary function of the organs of speech is to serve the purposes of respiration and nutrition, which are both instinctive activities. Speech, however, as appears from the facts adduced in chapters I and II, is the composite effect of all the active and reactive forces of both the mind and the vocal musculature.

Foremost among the reactive forces is the physical resistance of the vocal muscles to regularized articulatory movement. But there are many mental resistances as well, some imposed by convention, and others arising from associative and mnemonic hindrances.

The commonest motive of speech is probably the social instinct, hence a volitional stimulus, but each individual bit of speech is co-determined by the presence in the mind of those sound-images which, by being associated to their collateral physiological movements, will produce the vocal symbolism of what is intended to be conveyed to the hearer. The associative processes are therefore one of the fundamentals of speech. But the meaning of a communication is not tied down to any specific sound-arrangement. The sound-group [nai] for example, which signifies negation in the vulgar dialect of Amsterdam, conveyed assent in Greek.

2. Psychologists generally agree as to the association of ideas being a phenomenon conditioned only by the similar-

ity of the ideas themselves and by their temporal and spatial relations. But as long as there are no ideas there are no associations either. Whatever be the merits and demerits therefore of Locke's famous statement as to the mind of the new-born infant being a sheet of white paper [1]), it is fully appropriate in so far as the mind must be tenanted by ideas before they can associate. Hence no mental union can be effected between the name of an object and the names of its attributes until the images of both the thing and its attributes have come to be distinguished by the mind. No marble can be called red [2]) until redness and "marbleness" are recognized as distinct notions. No bird is ever declared to fly until the action of flying has been consciously observed with its name, and impressed upon the memory. Once properly distinguished from other motion imagery, however, flight, when heard of or seen, is capable of provoking its first concomitant name into consciousness, as when a wheeling bluebottle is pronounced to be a bird by an infant.

3. The first fusion of two sensory perceptions — the one auditory, the other visual, tactual or otherwise — is completed consciously, as indicated in II, 20. It is an advance in mental development upon that sensory process which transmits only one sensation to the mind. If consciousness is in abeyance, or attention directed the wrong way, the process ends in failure or in misconstructions.

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[1]) An Essay Concerning Human Understanding, Book II, Ch. I, 2. Locke is not the inventor of the "tabula rasa" theory but Aristotle. Compare Aristotle, De Anima III, 4, 429 b, 31.

[2]) There are frequent misnomers, it is true, but this does not affect the position. For if *red* is called *blue*, as it often is in the case of marbles of different colours, it is a mis-association from the conventional point of view, the object having been connected by the infant with an unconventional word.

This phenomenon is a common experience in every schoolroom, where new associations are constantly being added to existing ones, as when the pair *bird-duck* has *canard* added to it as the French equivalent of *duck*.

The connection once established, either word is capable of recalling the image of the other. This recall of one mental image by the action of another is what psychologists call association. The stimulant is not always in evidence, in which case the process is, or seems to be spontaneous. For mostly the operation of subconscious agencies can be traced.

4. Association is not restricted to the recurrence side by side of individual images, but whole groups of them may be revived by the stimulation of only one member of the group. The mention of King Henry VIII will recall a number of important events in English history. It recalls to the author's mind as he writes the following rhyme, occurring in W. le Queux's *As We Forgive Them*,

"King Henry VIII was a knave to his queens,
He had one short of seven, and eight or nine scenes."

Yet coherent speech is more than a mere reflex from the recall of mental imagery, whether single or in groups. Suppose the idea *cow*, by repeated observation and comparison has come to be discriminated from *horse*, the two ideas are sure to fuse into one associated group. Suppose further that both horses and cows have been seen first in Mr. Blank's meadow, there is a wider connection, with that meadow. But the series *cow, horse, Mr. Blank, meadow*, does not make sense, because it lacks the elements that join the words together in their proper relations.

5. A number of identical relations having once been distinguished, a process of attraction may occur between them, somewhat similar to the association of simple ideas.

The rescue of Anchises by Aeneas [1]) was awakened in Shakespeare's mind by the resemblance it bore to the rescue of Caesar by Cassius. As no relationships are sensorially perceptible, these associations are of a higher mental order involving the operation of the mind.

6. Infant speech often runs on lines which are closely parallel to the associative process. *Father sit, daddie back, daddie song sing, mammie lap* are all of them expressive of closely connected ideas in the baby mind. In the first instance it is the notions of *father* and of *sitting,* in the second of *dad* and *back,* in the third of *dad* and of *singing,* in the fourth of *mammie* and *lap.* In all of these, however, there is, as a co-formative of the expressions, an additional element of mental interest on the speaker's part, which can easily be gathered from the „context" of attendant gestures and movements.

The relationships involved are all of them of a spatial kind; of time there is as yet no notion at all in the examples.

7. Associative series of words are of no infrequent occurrence in prose and poetry. Cf. the following line from Shelley's "Ode to the West Wind."

..... leaves dead,
Yellow and *black,* and *pale,* and *hectic* [2]) *red,*

in which *yellow, black, pale* and *red* are involuntarily suggested by the image of dead leaves.

Cf. also the following cutting from Mr. Jingle's speech to Miss Wardle in "The Pickwick Papers":

"Yes Ma'am — damn that Joe! — treacherous dog, Joe told the old lady — old lady *furious — wild — raving — arbour — Tupman — kissing* and *hugging* — all that sort

[1]) See § 34 below.

[2]) Hectic is a secondary association to *red,* not to *leaves,* hence it implies an element of comparison and discrimination.

of thing — eh, ma'am, eh" — the italicized words being each of them significant of some fresh picture in the mental film.

Byron is rich in examples, as in the following line from Childe Harold's Pilgrimage, III, 28:

"*Rider* and *horse* — *friend, foe* — in one red burial blent."

8. The only language in which this sort of utterance is of regular occurrence is telegraphy, in which the smallest possible number of words is naturally aimed at to save unnecessary expense, abbreviation being carried to the very limits of distinctness. Telegrams generally convey the bare meaning of a statement only, with careful omission of everything that is redundant. The report by one person to another of the death of some mutual friend may be compressed into two words *Blank died*, all the usual accessories of regret being left out. Hence telegrams do but rarely exhaust a mental content, though unmistakably conveying sense. They are in fact generally composed by the negative process of eliminating from the full statement of facts everything that can logically be dispensed with.

9. In most cases the association of ideas, if converted into speech, produces no sense. The sight of a certain hotel the other day put the writer in mind of a London friend of his. For one moment the pair *Hotel* X — *Mr. N.* appeared in joint consciousness. The relation between the two mental images might reasonably be suspected to be owing to Mr. N. having stayed at the hotel for some time. Mr. N., however, was only recommended to go there in case he came to Groningen, but never stopped there at all. Hence it is clear that the mention of the two names does not convey sense.

0. Much more mysterious is the following sequence:

Berend, berend in vader Willems wal, Aardenburg, Ostend,

England. To any one not acquainted with the writer's personal history and the history of Holland, the words must be a perfect puzzle. Yet the hidden threads of unconscious activity uniting them are traceable one by one.

Berend (stressed on the first syllabe) is a pretty common Christian name in the north-east of Holland; *berend* (stressed on the second syllabe) is the past participle of *berennen,* a poetic term for *to attack.* Consequently the line of poetry of which *berend* is the opening word, means *"attacked in father William's walls"*, a circumlocution for Willemstad, a little town on the Holland's Deep, which repelled an attack by the French in 1793. Aardenburg is mentally related to Willemstad in having likewise, in 1672, sustained an attack by the French. It is situated in Dutch-Flanders and the writer stopped there in 1927, when on his way home from England via Dover-Ostend.

11. The conversion of such a train of associations into coherent speech requires mental effort. The associations themselves may be of a spontaneous character but their logical relations are not so. If the speaker is to be understood by the audience the first step towards establishing contact is the ascertainment of these relations, which in the case of Aardenburg and Willemstad consist in both having been involved, though at different times, in the predicate "attacked by the French". Their common spatial relation to the kingdom of the Netherlands is of little importance, being entirely in the background.

This being settled, the next stage in the mental process is that of finding a form that will make the meaning clear to the listener, a process which again involves conscious thought activity, consisting in the selection of the words to be employed, the speaker being guided by his linguistic sense of how things usually are expressed in the common

medium of thought and therefore ought to be expressed. Or, to put it in psychological terminology, there is a subconscious memory of the general procedure of psychomotorial activity to which each special instance is subordinated.

12. How very troublesome a process this subordination may be will appear from the following examples collected in the classroom. A boy was asked to translate the following sentence into Dutch: *The local doctor was expected soon to make his appearance as Santa Claus,* but failed in the attempt to find a Dutch parallel, although every English word was familiar and the logical relations clear enough. On being questioned as to the meaning of the sentence he gave a satisfactory paraphrase. There could be no doubt therefore as to whether the mental content had been properly transmitted to his mind by the English text, every part of it being duly distinguished in its relations to the rest of the sentence. The only thing that baffled him was how to find a Dutch rendering for the English nominative-and-infinitive construction, which though easy enough to understand, had not become properly associated with its Dutch equivalent.

In translating *Unknown to his father, Koosie had learned to load a gun,* ten seconds were spent by another boy in rendering the opening participial adjunct into *Zonder dat zijn vader het wist* (= *without that his father knew it*), which is the common Dutch way of expressing it.

Much more difficult to translate is the following:

The garden was in the first promise of a summer profuse in vegetables and fruits. With the sole exception of *profuse* the words are common enough, and the syntactical relations plain enough. Yet only one boy in a class of eighteen succeeded in disentangling the logical relations from their

linguistic environment. The rest did not perceive that *first* is related to *summer* rather than to *promise* to which it is syntactically joined.

13. In the above sentence the only sensorially perceptible elements are *garden, vegetables* and *fruits.* All the rest is mentally supplied; *summer* denotes the season and *first* marks its early part; *promise* denotes an act of volition with which the summer is credited and in which the garden is felt to be concerned; *profuse* expresses an act of judgment based upon perception; *was* marks the "pastness" of the situation; *in* marks the involvedness of *garden* in the early summer's promise; *of* denotes the subjective relation between *summer* and *promise*; *in,* standing as it does between *profuse* and *vegetables and fruits,* limits the meaning of *profuseness.*

The fact that *summer* is the subject of the act of promising, rather than garden and that *garden* is indirectly affected, appears from transposition of the two. *The garden first promised a summer profuse im vegetables and fruits* does not make sense, because *summer* is altogether independent of the personified *garden's will,* whereas the dependence of *garden* upon the *summer's will* is logically conceivable. It was in the "first" of a summer promising a profuseness (wealth) of vegetables and fruits. It was the early part of summer and the garden promised an abundance of vegetables and fruits.

14. The fact that the above boy, whose average attainments reached as high a figure as 93 %, took quite a little while to convert the sentence into current Dutch, although its semantic elements and its syntax were perfectly plain to him, shows conclusively how very powerful a part in sentence-construction is played by the linguistic agencies, i. e. the conventional laws of a language. For although

the above sentence, upon a literal translation of each of its elements into Dutch, is perfectly intelligible to cultivated Dutch readers, they feel such a translation to be un-Dutch, and will unconsciously try to adjust it to their own linguistic patterns before giving it sound and utterance.

In the case in question only one boy succeeded, and his seventeen fellow-pupils failed in the attempt.

5. After the due and proper analysis, then, of a mental content, there remains the final problem of its conversion into speech. The well-known figures of speech reveal many discrepancies between mindcontents and their externalizations. In ellipses and contractions verbalization is reduced to the lowest possible minimum consistent with intelligibility. In pleonasms there is logical redundance.

Other instances of the absence of equilibrium between the component forces of speech are to be seen in every form of literary production, from common letters to prose and poetry. What on the face of it would seem to be smooth and even effusion often proves on investigation to have been altered and furbished up in numerous ways before being given to the public. Ordinary correspondence often requires correcting and re-writing to make it presentable. Untrained writers are apt to make gross mistakes in composition. Many a boy in class is perfectly clear as to what's what about a geometrical or linguistic problem and yet unable to express his mental content in intelligible speech or writing. Practice may remove the impediments to some extent, but one never quite gets over them. Some effort there always remains in speaking and in writing; even the plainest mental experiences have some resistance to overcome on their way to the organs of articulation.

Re-writing, moreover, proceeds at a quicker rate than the writing of a draft, which shows that in the latter case the psycho-neuronic resistance must have been greater.

The difficulties of how to begin a speech or a letter and how to end are felt not only by those who are not natural orators; even the best orators are never quite above them and are apt to hesitate about a word or phrase. The less gifted ones will insert frequent voice-murmurs or pauses before each new member of a sentence. The greatest writers apparently have some difficulty in finding the right words for the right places. The opening part of Dickens's *A Christmas Carol* contains numerous erasures. Trelawney says of Shelley's poetry that the original drafts of the latter's lyrics bore little resemblance to that perfect workmanship of Shelley's which has become the admiration of the world. The manuscript of such a little lyric as *The Star-spangled Banner* shows even a few erasures [1]), though it was written down a considerable time after its conception, and therefore had had ample time to mature. Thomas Gray took many years to fashion and re-fashion the famous Elegy before giving it to the press.

All this is ample evidence to show that, far from being instantaneous responses to excitations from without or within, speech or writing in its final form is the joint production of all (or nearly all) the psycho-neuronic and psycho-muscular active and reactive forces of the mind. The corrections and emendations show the strength of the unconscious agencies, but also the constant endeavour of the intellect in the process.

16. There is nothing wonderful in all this. In such a sen-

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[1]) I quote from memory. There was a facsimile of *The Star-spangled Banner* in *The Century Magazine* many years ago.

tence as *Brownness doesn't argue health,* only the meaning of the first word can be visualized, the others cannot. *Honesty is the best policy,* and other analogous constructions are not open to mental control until the words have become mentally visible or audible, so that mistakes are not open to mental reaction until produced or in course of production, and as the mechanical forces of association are always apt to suggest the wrong word for the right one, or the lesser for the better, judgement cannot assent or dissent until the whole of a statement is open for its inspection.[1]) Part of it may be in course of utterance while the rest is being anticipated, or the whole of a sentence may already be in the conceptive stage before the antecedent matters have been fully delivered; the first may be right and the second part found to be wrong; or the first part may be found wrong the moment the second part is joined. A pretty common experience for example is for a man to break off in the middle of a sentence saying *No, I won't say what is in my mind,* or *No, I find I am on the wrong track;* or *what I said was wrong; this is what I mean.* All sorts of complications are apt to arise. Attention may be fastened upon elements beyond those which logically ought to come first in the order of utterance, as in prolepsis; some indispensable link in the order of a statement may appear to have been forgotten, necessitating

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[1]) Owing to the comparative slowness of muscular reactions thought is always in advance of speech, hence words are made conscious before the muscular activity for their production sets in, and conscious control asserts itself once more when the vocal organs begin to move. For within one thousandth of a second after its formation each sound reaches consciousness again through the auditory sense, the distance from the mouth to the ear being less than a foot, and sound travelling at the rate of 1000 feet per second.

the speaker to "retrace his steps" in order to cast the sentence in a more intelligible form.

17. If speech were all stereotyped memory work, such as *How do you do?* and *Nice weather this morning,* and *Have another cup of tea,* and *Kind regards at home,* etc. — the matter would be easy enough. Association could do it all. The occurrence of an associative stimulant such as the sight of a friend etc. would be sufficient to call forth the phrase required. For association, as stated above in 4, is not confined to single mental images such as written or spoken words, images of houses, books, dogs etc., but compound experiences such as complete sentences and bits of composition can be revived by having only one of their elements suggested. "*Rule*" may put one in mind of *Rule, Britannia! Britannia rule the waves!; curfew* will suggest to many minds the opening line of Gray's Elegy, and, once started, the whole poem may be recalled.

Association, however, is confined to the elements in a person's memory. To one unacquainted with the former or the latter poem, the word *curfew* is very unlikely to suggest *Tho curfew tolls the knell of parting day,* nor the word *rule* the first line of Thomson's ode *When Britain first at Heaven's command.*

18. The union of two or more sensory [1]) elements into a sentence differs from the fortuitous concurrence of associative elements in the former being under the control of the judgement (with due allowance for the possibility of error!), whereas the latter is not. Even if there is a pattern sentence in the mind for analogy to work on, each new construction requires some mental effort in being adjusted to that pattern.

[1]) Sensory elements are meant to include abstract words as well as concrete ones.

The point is best illustrated from mathematical examples. The statement that $2 \times 2 = 4$, is learnt by heart and capable of recall at will. So are all the multiplication tables. Yet any one not knowing by heart how much is 17×17, will take some little time to find out.

The fundamental fact about arithmetic is that $1 + 1 = 2$. Yet arithmetical beginners, even if their notions of oneness and twoness are well established, do not at all take such facts as $1 + 1 = 2$ and $2 + 1 = 3$ as things that speak for themselves.

Suppose the arithmetical problem of dividing 180 marbles between Alf, Bill and Charley is solved to satisfaction, Alf being allowed ten more than Bill, and Bill ten more than Charley, it does not follow that no trouble will be experienced in finding out how many degrees are contained in the angles A, B and C of a triangle, if A is ten degrees larger than B, and B ten degrees larger than C.

The well-known formula $(a + b)^2 = a^2 + 2ab + b^2$ came from a certain lad of thirteen without any hesitation. Yet the substitution of $p + q$ for $a + b$ was enough to cause two pauses between p^2 and $2pq$ and q^2 respectively.

$(3c + d)^2$ was argued as follows:

$(3c + d)^2 = \ldots . + d^2$ is ə .... is ə .... let me see; yes, I can do it in my head .... ə .... $3x$ .... no $2x + d$ .... oh yes $(3c)^2 = 3^2$ multiplied by $d^2 = 9c^2 + \ldots .$ wait a moment + ... yes I see, it's $9c^2 + \ldots . + ə + 6cd +$ $+ d^2$. — The dots mark the boy's pauses, the ə's his intervening voice-murmurs. [1])

9. In language matters the process may be somewhat different, yet the analogy is close enough to warrant

[1]) The boy was "thinking aloud".

conclusions. If once the four cases of "Der Mann" have been mastered by a beginner in German, it does not follow that "*Der Turm*" should be declined forthwith without any trouble.

The following paradigm was taken down from the lips of a boy who could say *der Mann, des Mannes, dem Manne, den Mann,* without any mistake.

Der Turm,
Des Turm .... es,
.... Dem Turm .... e,
.... Den Turm! (the accusative coming like a cry of victory!).

There can be no doubt that the space between *Turm* and *es,* and *Turm* and *e* in the genetive and dative respectively was devoted to comparative activity of *Mannes* and *Turmes,* and *Manne* and *Turme,* in much the same way as a^2 and p^2 and $(3c)^2$, and $2ab$, $2pq$ and $6cd$, were compared in the algebraic process.

Now the only sensory alteration required in the above bit of algebra was that of affixing the exponent 2 to p and q, and of substituting pq for ab in $2ab$, whereas in the German paradigm *es* and *e* had to be appended to *Turm* on the analogy of *Mann* + *es* and *Mann* + *e*. The form $(3c + d)^2$ involves a greater amount of thought activity from two more mental operations coming in through the introduction of the figure 3 into the group of conscious symbols, the effect of which is easily seen from the above computation.

20. When therefore such forms as *Turmes* and p^2 are formed without any effort on the analogy of familiar patterns, it can only be through the force of habit conquering resistance in the associative channels of the mind. But whenever mental structures are forced into union with others they

have never or rarely been associated with, the neuronic process cannot be made to run on established lines, and neuro-muscular resistance is bound to assert itself. For every fresh arrangement of the mental imagery of speech requires a corresponding adjustment of the motor process of articulation. Appeal to feeling as the ultimate cause of fresh combinations is of no avail, since there can be no memory of different feelings in the case of identical endings.

1. The most conspicuous thing then about a language is its unability of reproduction by those not acquainted with it. Their case is more or less analogous to that baby-stage of language referred to in I 6, namely the utter inability of speech communication until there is some command of the common medium of speech. This compulsory silence on one hand, and the free and rapid flow of sound from a perfect orator on the other, mark the two limits of speed of human oratory.

As speech is impossible without words, and as words are ultimately based upon the association of sounds and things, the associative process is one of the great fundamentals of speech. Whenever it acts imperfectly, or fails to act, speech will be defective or break down altogether.

It acts imperfectly [1]), from the orator's point of view that is, when rival associations trammel his delivery, by confusing various designations for the same thing, as when two or three synonymous words jump into consciousness together.

It also acts imperfectly when suggesting native words

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[1]) From a psychological point of view there is no such thing as imperfect association, I believe, but from a linguistic point of view I think we may style it so.

for foreign ones, where a foreign language is the medium of communication.

It fails to act if the right word refuses to come at the right moment, i. e. if the mental imagery is unable to suggest its word-equivalent, and therefore unable to stimulate the motor mechanism for the word to be given to the audience.

23. It follows from II, 1, that whatever may be the stimulus for communicating thought or internal experience, it is clearly impossible to establish a contact between the parties concerned, unless there is a common stock of words familiar to all of them. There can be no speech in the proper sense of the term unless this primary condition is complied with.

24. We are so accustomed to having words ready for use that this fundamental fact is apt to sink into oblivion. Yet the common call for a cup of tea in a French restaurant, when nothing but French is spoken there, is beyond the power of anyone that does not know the French for *cup* and *tea* respectively. Gestures may help one out, words cannot. If gestures prove successful we shall probably hear from the waiter the right word and learn this bit of French from him.

These cases are analogous to that infant stage exemplified in a little child's getting hold of a decanter, or in running into the kitchen, pointing to the tap in order to signify its desire for a drink of water, which may be the occasion — it mostly is — for thirst to be connected with some monosyllabic corruption of the sound-group *water* that will henceforward be the medium of communication.

25. Even if the right word for a thing is at our beck and call, it does not follow that utterance will follow stimulation with the rapidity of reflex reactions, as cries are evoked

by sudden pain, or other motor responses by excitations of the nervous system.

Spontaneous, or nearly so, is the following instance.

A two-year-old girl, on being shown her father's almost lifesize portrait, responded with the instantaneous cry of "Daddie, daddie! Is daddie! Two daddies! This daddie." (pointing to her father) "and this daddie!" pointing to the portrait.

But the sight of a much smaller photograph of the same person, after being looked at for some time, produced only an unemotional "dad" for answer.

In the latter instance the process of recognition took some time to complete and evidently dulled feeling down to zero.

As stated in II, 2, a sentence cannot be completed in cases of failure to recall the sound-representatives of the various items of the mental content that presses for utterance. E. g.: "I told Captain ....., I forget his name now. You know him well enough, he was that dark-haired artillery-officer."

Expressions sometimes break down half-way, as in the following instances of infant speech.

Clara, aged 3: "*If I.....*, *if mammie.....*, *if Lala....*"

Mary H. aged 5: "*Teacher said.....*, *teacher told us....*, *teacher said .....*, *teacher said nothing.*"

In the first example the mental imagery was complete; in the latter cases it probably was not. What was said rather leads one to think that it was too elusive to be converted into coherent speech.

Utterance can be deferred or entirely checked by the will. This is a common schoolroom experience when the teacher, in preference to publicly reprimanding a boy for some little offence, decides to have a private talk with the

culprit after the lesson, or to let the matter drop without remark.

There may be "internal speech" in some of these cases, but whatever the teacher's mental reaction, it is not carried to the ultimate end of speech, i. e. the understanding of it by the listening party. But very often the teacher's mental experience does not exceed sensory perception. He remains merely passive to what is going on before him.

28. Speech can also be interrupted or broken through some unpleasant recollection being associated with a word or phrase.

A little girl had taken fright of the word *ass*, from having once been severely reprimanded for calling the servant an *ass*. Many months afterwards, on the word *ass* turning up in the course of a Sunday school story, she did not dare to utter the dangerous word till reassured by her mother that there was no harm in saying it now. "But I mustn't call Sophia an ass, must I?" was her final remark.

29. Words may be stifled by emotion and drowned in tears and sobs. They may prove inadequate to vent a man's sudden anger, and blows and punches may be resorted to instead to unburden the overcharged mind.

Nobody is likely to doubt the expressiveness of the latter procedure, but it can only be called "*speech*" by extending the meanings of the words *language* and *speech* beyond their usual geographic and ethnographic limits. For language or speech of this description is truly universal.

30. In complex sentences the order of expression may be the reverse of the order of stimulation. For example:

Shopkeeper, to candidate presenting himself as assistant, "Yes, I want a bright young man, to be partly outdoors and partly behind the counter."

Young man, looking alarmed:

"Why, governor, what becomes of me when the door slams?"

The slamming of the door is antecedent in the mental process to the thought of what is going to happen afterwards.

1. The order of expression may be different from the order of the mental process owing to some element in the latter engaging attention so strongly as to dislodge its predecessors from the focus of attention, thereby obtaining priority in the process of delivery, as in *He jests at scars who never felt a wound.* [1])

He who never felt a wound is the leading psychological group, the jesting at scars coming after it, the whole sentence being equivalent to the conditional statement *If a man never felt a wound, he jests at scars.*

Compare also the sentence *Happily the man did not die* [2]), in which *happily* comes first in the order of expression, although the feeling it represents must necessarily have been subsequent to the observation that the man did not die. [3])

2. Speech cannot be made to respond to more than one stimulation at a time, because the neuro-muscular apparatus involved cannot perform more than one movement together. The vocal chords cannot be both tight and lax

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[1]) Shakespeare, Romeo and Juliet, II, ii, 1.

[2]) J. C. Nessfield, Errors in English Composition, Chap. III, 7.

[3]) In inflectional languages such differences between sequences of internal and external events are very common. Cf. for example the following line in Ovid, Metamorphoses, I, 6.

unus erat toto naturae vultus in orbe,

which, reduced to English word-order, would run as follows:

unus vultus erat in toto orbe naturae.

In this line, as in the one quoted above from Shakespeare's, metrical considerations are unmistakably responsible to some extent for the departure from the logical order.

at the same time, the uvula must be either up or down; the tongue cannot move backwards and forwards at the same time; the lips can only be moved in one direction by one single act of their muscles.

Hence without selective activity response is physiologically *impossible when the receptive centre* in the brain has two or more different impressions transmitted to it simultaneously.

Cf. the following passage from Shaw's "Arms and the Man" (Act. I):

"*Whilst the fusillade is still echoing*, the shutters disappear, pulled open from without, and for an instant the rectangle of snowy starlight flashes out with the figure of a man silhouetted in black upon it."

The disappearance of the shutters, the rectangle of the snowy *starlight and the figure of the man are seen* practically at one glance. But speech cannot record these visual impressions except by following the attention step by step in its passage along the items of the picture. Much more is mentally perceived, however, than the senses take in. Sensation is followed by *analysis of the situation*, not only the things themselves being *scrutinized*, but their relations to one another as well.

There is a notion of time in "*for an instant*", there is a notion of causality in "*pulled open from without*". Synthesis unites what goes logically together, and *this being* completed, the motor agencies are set to work to translate the whole process into speech.

The situation, psychologically speaking, is made more complex still by the echoing of the fusillade.

33. Utterance may be broken in a somewhat similar way by internal associations crowding upon the mind in such numbers as to defeat the logical attempt to restore order

amongst them by assigning them to their logical categories. Hesitations and stammerings are the result, ending perhaps in nothing or in the desperate confession "I don't know how to say it."

A common instance in English is the confusion of the demonstratives *this, these, that* and *those* respectively, with their Dutch equivalents, the result being such broken bits as .... *this man, these man, no, that .... no, this man.* The right form may come out victorious in the end, but beginners often make a hopeless mess of it.

4. Lastly, utterance may be interrupted through parenthetic thoughts running broadside into that which is in course of delivery. E. g.:

> "Caesar cried, 'Help me, Cassius, or I sink!'
> I, as Aeneas, our great ancestor,
> Did from the flames of Troy upon his shoulder
> The old Anchises bear, so from the waves of Tiber
> Did I the tired Caesar." (Julius Caesar, I, ii, 111-115).

The leading thought, first and foremost in the mind, was *"I bore the tired Caesar"*. Before it is fully delivered, the analogy to Aeneas's feat in carrying old Anchises from the flames, leaps into consciousness, overpowering attention and preventing the completion of the sentence until it has itself been delivered. *"I bore the tired Caesar"* is unmistakably the excitant which draws the analogical relation of Aeneas rescuing Anchises into the field of attention, because Caesar was in Cassius's mind together with the Tiber incident, before Aeneas and Anchises could enter the mental scene.

If the expression of a conscious thought were inseparable from its mental antecedents as thunder is from light-

ning, there could be no such break between the two.[1])

35. The presence of mental activity in the delivery of the bits of language adduced in the foregoing sections would seem to be undeniable. If vocal reactions can be regulated and altered at will, they must be under mental control, for no verbal organization can disorganize itself. No gramophone record for example could of its own accord break the continuity of its words, as Clara did in the last example and as millions of children are doing every day in their first spelling attempts.

The possibility of disintegration is not confined to sentences and words, it extends even to single sounds. When actually on the move for the production of the initial *p* of such written symbols as *psalm* or *pneumonia*, the lip-muscles can be made to stop as soon as the speaker remembers that the *p* is "mute". Thus I have known many a pupil take a *w* on his lips to say *write*, and then suddenly say "No", dropping the *w* and changing his course to *r*.

Whenever the movement of a set of vocal muscles is thus interrupted without there being any peripheral obstacle to prevent its completion, the counteraction proceeds from a central stimulation of the antagonist nerve. This central stimulation is caused by some conscious, cognitional or volitional mental event, the recollection or feeling namely, that it would be wrong or improper to finish the word or the sentence.

The operation of mental activity is to be inferred from the pauses and voice-murmurs intervening between the

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[1]) A remarkable instance of "sentence-breaking" was committed by Clara when 7½ years of age "Vader is een s...., vader is een st...., vader is een stou....te vader". Its English equivalent would be something like the following. "Dad is a n...., dad is a naugh...., dad is a naugh.... ty dad."

elements of a sentence, as in the case of the boy in § 18 above figuring out $(3c + d)^2$. It is even more evident from the *yes* and *no* occurring parenthetically as verbalizations of the judgemental activity going on in the boy's mind.

The physical or physiological effects upon the vocal musculature produced by these psychic resistances and modifications of neuronic excitations we must leave to the physiologist to determine. They are matters of physiology and not of language. But the only thing experience shows, the only thing immediately given in the chain of events which results in speech, is its psychic side, which no physiologist can ever explain away.

36. This, in brief, seems (to me) to be the principal objection to the explanation of language suggested by the so-called behaviorist school.

It appeared in the psychological field about 1912, and challenges the very existence of consciousness. "Belief in the existence of consciousness goes back to the ancient days of superstition and magic", says John B. Watson. [1]) "No one has ever touched a soul, or seen one in a test tube, or has in any way come into relationship with it as he has with the other objects of his daily experience" (p. 3). "In the analysis of consciousness made by certain of the psychologists you find such elements as *sensations* and their ghosts, the *images*. With others you find not only sensations, but so-called *affective elements;* in still others you find such elements as *will-* the so-called *conative element* in consciousness" (p. 4). "This thing we call consciousness can be analyzed only by *introspection* — a looking in on what takes place inside of us. As a result

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[1]) John B. Watson, Behaviorism, 2nd ed. 1931, p. 2.

of this major assumption that there is such a thing as consciousness and that we can analyze it by introspection, we find as many analyses as there are individual psychologists." (p. 5). "The behaviorist dropped from his vocabulary all subjective terms such as sensation, perception, image, desire, purpose, and even thinking and emotion as they were subjectively defined." The behaviorist asks: Why don't we make what we can observe the real field of psychology? Let us limit ourselves to things that can be observed and formulate laws concerning only those things. Now what can we observe? [1]) We can observe behavior — what the organism does or says. And let us point out at once that *saying* is doing — that is, behaving. Speaking, overtly or to ourselves (thinking) is just as objective a type of behavior as baseball.

The rule, or measuring rod, which the behaviorist puts in front of him always is: Can I describe this bit of behavior I see in terms of stimulus and response? By stimulus we mean any object in the general environment or any change in the tissues themselves due to the physiological condition of the animal, such as the change we get when we keep an animal from sex-activity, when we keep it from feeding, when we keep it from building a nest. By response we mean anything the animal does — such as turning toward or away from a light, jumping at a sound and more highly organized activities such as building a sky-scraper, drawing plans, having babies, writing books and the like." (p. 6).

37. Before proceeding to a discussion of that class of behavior with which we are more nearly concerned, i. e.

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[1]) Has the behaviorist a right of talking about observation, which is nothing but a mental function?

speaking, we may be pardoned for passing a few remarks on the above principles of Watson's and pointing out a few inconsistencies in his position.

It must be granted that no consciousness or soul has ever been seen in a test-tube. Nevertheless one's own consciousness is the only thing in the world which a person knows immediately. And all that natural science knows, is known by such imperceptible data of perception and observation.

More certainly than one comes into contact with hypothetical ether or matter, one comes into relationship with *soul* in the individual and collective sense of the term, every day of one's life. It appears in diverse ways. Why does the average white man behave to white fellow-beings otherwise than to black? Is it a matter of colour only? Even if it were, it must be remembered that colour is an elementary psychic entity. Do dogs and cats react that way? One feels tempted to quote Shakespeare once more, who was a better judge, I think, than the behaviorists.

> "You have among you many a purchased slave,
> Which, like your asses and your dogs and mules,
> You use in abject and in slavish parts,
> Because you bought them: *shall I say to you,*
> *Let them be free, marry them to your heirs?*
> *Why sweat they under burdens? let their beds*
> *Be made as soft as yours and let their palates*
> *Be seasoned with such viands? You will answer*
> *'The slaves are ours'*: so do I answer you:
> The pound of flesh, which I demand of him,
> Is dearly bought; 't is mine and I will have it."
>
> The Merchant of Venice, IV, i, 89-99.

The suggestion of an American girl marrying a negro is enough to give the average white American the shudders. Watson will answer me: His shudders are conditioned reflexes. I quite agree. The shudders are conditioned by the white man's racial prejudice, for negroes do not react that way on negroes, nor whites on whites. But until racial prejudice can be shown to be part and parcel of people's chemical constitution, nobody is likely to credit Watson's bold assertion without further proof.

38. I will add another example. In 1898 an American warship came to grief in Havana harbour. Spain got the blame, though perfectly innocent. Yet the Maine accident raised a wave of indignation throughout America. "To hell with Spain! Remember the Maine", became one of America's warcries. It was again "conditioned" behavior. The American people had been speechified and harangued into that state of nervous tension which will have its way out in war, and which will believe anything it hears about the opponent's doings. The final stimulus to turn the chance of war was the supposed complicity of Spain in the blowing up of the Maine. The question confronting the behaviorist is, how a purely imaginary stimulus can bring about such a terrible response. Perhaps Watson will refer me to the reports of the affair in American papers, the word-substitutes of the accident having the same effect as the thing itself. But the fact remains that what was "substituted" by these reports was not the real affair, but only a supposed connection between the accident and the Spanish authorities, so that ultimately the fallacious interpretation of the event did not spring from the external environment, but from the internal situation, i. e. from popular feeling in

[1]) Compare the manufacture of public opinion in Italy by Signor Mussolini, prior to embarking upon his Abyssinian adventure.

America, which twisted an accident into premeditated malice.

Wars and street-fights, as baby-fights in the nursery, are manifest absurdities from a purely non-emotional point of view. Put a negro and a white man into a test-tube and reduce them to chemical formulae. Will there be any difference? Will the test-tube reveal the difference in colour? If it did, the test ought to be repeated with two antagonistic politicians of the same colour and size. I do not believe the chemist would solve the problem why Germans and Frenchmen have so long been distrusting each other and are quite likely to go to war again if they get a chance, with flying-machines, gas-bombs, tanks, eighteen-inch guns and things, until, like the dogs in the fable, there is nothing left of them.

It appears that, though no one has ever touched a soul or seen one in a test-tube, soul, if improperly handled is just the kind of reality that will send a man or a nation to ruin.

39. As regards the cognitional part of the matter the following points deserve notice.

With my eyes shut I can recall the table I am writing at, the visible part of the room I am sitting in. I can also recall Big Ben in London and Liberty Statue in New York harbour. I can recall rivers, lakes, and the visible expanse of water I have seen when at sea. While recalling these things they are realities to me. Is it "superstition and magic" to say I am conscious of them or remember them?

Watson says it is, and suggests another explanation. "Memory", he says, is "the retention of verbal habits" (p. 235). "You can see that memory is really the functioning of the verbal part of a total habit." By verbal part etc. is meant the verbal or word substitute of some acquired habit, say playing golf. What is popularly called "memory" is then the running through, or exhibition of the verbal

part of a total bodily organization. The manual part of this organization is not being called out — if the manual part were called out, we'd say "he is doing it" instead of "he is remembering it" (p. 256). Memory in the behaviorist sense is any exhibition of manual, verbal or visceral organization put on prior to the time of tests. "Being conscious is merely a popular or literary phrase descriptive of the act of naming our universe of objects both inside and outside, and that "introspecting" is a much narrower popular phrase descriptive of the more awkward act of naming tissue changes that are taking place, i. e. movements of muscles, tendons, glandular secretions, respiration, circulation and the like." (p. 265).

It will be seen how sedulously the sensory "physiology" of affairs is avoided by Watson. What I experience in recalling Liberty Light is not the behavior of naming, but the whole contour of the object, the upraised arm of the huge female, towering high above the vessels passing underneath. And what one experiences in recalling a football-match is not the names of the unknown players or the spectators, nor the names of the kicking, running, etc. nor the name of the nameless field, but the whole of the scene.

The verbalization of behavior is quite another thing, than the behavior itself and so "awkward" in fact that Watson stumbles at almost every step, a highly amusing instance being the sentence "He is remembering". One may exhibit one's own verbal organization but it is nothing short of clairvoyance to exhibit another person's.

40. Certain dynamic processes furnish no less convincing evidence of activities which are commonly styled mental — mental arithmetic for example. It is possible to multiply three place or four place figures or even more. It is also

possible to extract the square root out of seven or nine place figures, all "in one's head", as the popular phrase has it. The process can be visualized or auditivized. Do the figures one sees or hears in one's head, as they recur again and again, actually represent nervous activity up and down the nerves, something like toy monkeys climbing up and down a string? They don't. They do not stir the vocal nerves into sound either, unless a person thinks aloud, as the boy did in 18 above. Watson will probably argue that our method is the introspective method of "the ancient days of superstition and magic" in psychology. But almost in the same breath Watson himself falls into superstition by saying that speaking overtly or to ourselves (thinking) is just as objective a type of behavior as baseball (p. 6). I do believe it is. Only, one wonders how Watson is to discover *talking to ourselves* behind closed lips, by other than introspective methods. His appeal to the string-galvanometer on page 240 must be dismissed. It may register electric reactions in the human system, but it will not register speech. And suppose an instrument could be devised that would register and autonomously repeat sound, it would not register its meaning. Only the human mind can register that.

41. "Notwithstanding the fact", says Watson (p. 165), "that in all emotional responses there are overt factors such as the movement of the eyes and the arms and the legs and the trunk, *visceral and glandular factors predominate.*" "Society has never been able to get hold of these implicit concealed visceral and glandular reactions of ours, or else it would have schooled them in us, for society has a great propensity for regulating all of our reactions. Hence most of our adult overt reactions — our speech, the movements of our arms, legs and trunk — are schooled and ha-

bitized. Owing to their concealed nature however, society cannot get hold of visceral behavior to lay down rules and regulations for its integration. It follows as a corollary from this that we have no names, no words with which to describe these reactions. They remain unverbalized."

"Because, then, of the fact that we have never verbalized these responses, a good many things happen to us *that we cannot talk about. We have never learnt how to talk about them. There are no words for them.* The theory of the unverbalized in human behavior gives us a natural science way of explaining many things the Freudians now call "unconscious complexes", "suppressed wishes" and the like."

The italics in the above quotations are Watson's. "Unverbalized" refers to the absence of words for certain internal processes. The absence of words is owing to our not having learnt to talk about them. "Our not having learnt" is another way of saying "our not knowing". "Our not knowing" is our unconsciousness.... And so from the serenity of his new Olympus the behaviorist slithers down to the level of the older schools with their "superstition and magic".

The limit of "superstition" is reached when the theory of the unverbalized is said to give us a natural science way of explaining many things, for what is unverbalized cannot be explained, no explanation being possible without words of some kind or other.

It is hard to see, too, how the whole of society can be made responsible for the absence of names for things that are the private concern of natural scientists, hence of only a very small fraction of society. The confusion of "society" and "natural science" is inadmissible.

42. If Watson thinks out the full purport of his statement

that "talking to ourselves (thinking) is an objective type of behavior", as observable as base-ball, he may come to see that talking to ourselves involves a person *who talks* and *one who is being talked to,* a subject and an object united in the same person, the observer being the same as the observed, the subject made its own object.

If behaviorism could be made to see it, the "ghost" of Berkeley would rejoice, and many living scholars would gladly help the behaviorist to raise a bonfire with the printed paper wasted in finding distinctions where there was no difference. For truly: What's in a name? Would that which has hitherto been called thought, smell more sweet when called implicit or internal speech? (p. 239).

The introduction of a new nomenclature is one of the great features of behaviorism. The new terms are seldom improvements upon the old ones, however. Words are said to be substitutes for objects and situations. Symbolism is ruled out of court. It would be an impossible thing in a vocabulary in which mind and consciousness are taboo. But "substitute" is a very poor substitute. It shows the hopeless confusion into which behaviorists are led by their innovations. Can a word be a substitute for a thing? Can the word breakfast be a substitute for a real breakfast? The sound-group "ham and eggs" for the real thing? A man might take *déjeuner* and *Frühstück* along with it as substitutes and still go hungry.

Words are not of course, associated to things in the old style, no, they are "tied up" to the objects. "We know how to make a frog croak by rubbing a certain spot on its body. We can make a dog bark, or a monkey give out a certain sound. We do not know how to 'press that button' on his body, be it inside or out, which will make a baby say 'da', 'glub', 'boo-boo' or 'aw'. If we did, we

could build in words and phrases and sentences at an early date and very, very rapidly. In the case of the human young we just have to watch for a sound which is nearest some conventional word and try to tie it up to the object (make it a substitute for the object) that calls out that word in the adult."

I must have it noted how very carefully Watson evades the use of the term brain and cortex. By "a certain spot" on the frog's or the dog's or the monkey's body presumably the cortex is meant, when experimentally excited.

One cannot help wondering too how the tying up (of the sound to the object) can be accomplished in terms of behavior. One can tie a horse to a post right enough, and verbalize the act. But *tying up* a word to a thing is beyond verbalization, because it is beyond behavior in the "psychological" sense of the term.

43. Thinking as stated above is nothing but talking to ourselves. "The evidence for this view is admittedly largely theoretical (p. 238) but it is the one theory so far advanced which explains [1]) thought in terms of natural science. I wish here expressly to affirm that in developing this view I have never believed that the laryngeal movement as such played the predominating rôle in thought." (p. 239). "Recently Agnes M. Thorson has found that tongue-movements are not universally present in internal speech." (p. 240). "She says the activity is intra-neural."

Watson adds that Miss Thorson's experiments are very inconclusive. Her setup could probably be depended upon for positive results, but the method was too inexact to serve as a basis for negative conclusions. Tongue move-

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[1]) "Explains" according to Watson, that is. Compare the last paragraph of section 40 above.

ments were recorded by a compound system of delicate levers. No instrument less sensitive than the string galvanometer can be depended upon for negative results. Yet "possibly it will always be difficult to obtain an overwhelming mass of positive evidence for this view. But there is no other theory at present advanced which is tenable — no other view in line with the known facts of physiology. This throws all the burden of proof on any contrary hypothesis, such as that advanced by the imagists and by the psychological irradiationists. Naturally we are all interested in facts. If, when they are obtained, they make the present theory untenable, the behaviorist will give it up cheerfully. But the whole physiological conception of motor activity — that motor-activity follows sensory stimulation — will have to be given up along with it." (p. 241).

I do not believe it would. Though not a behaviorist I will venture a suggestion that may bridge the physical difficulty. It is the possibility of converting kinetic into potential energy, or of electric into chemical.

The fact that some structural modification is caused within the brain by sensory stimuli is not denied by anyone, I believe. The difference seems to be in the mode of motor responses. In the foregoing chapters I have stated the grounds for my belief that there is no straight path from the incoming to the outgoing neurones in the case of speech reactions. If relay were immediate there could not be such "murdering" of speech by infants, nor by adolescents when trying a foreign language. There is the further fact that one and the same stimulus, say the sight of a horse, may be reacted on in as many different ways as there are different words for the object *horse*. Speech reactions are learnt species of behavior.

Though willing to endorse James's statement that "no mental modification ever occurs which is not accompanied or followed by a bodily change" [1]), I must positively demur to the parallel assertion that "Every impression which impinges on the incoming nerves produces some discharge down the outgoing ones, whether we be aware of it or not." [2])

As regards the being or not being aware, I think we can let that drop, but as regards the discharge down the outgoing nerves, I have demonstrated in the foregoing sections, that speech discharges at any rate, are conditioned by mental circumstances, whatever they may be physiologically. There is a relay, which may be made possible by the brain converting the kinetic energy received by the incoming nerve into potential energy, which can be held until the judgement says it is time to pass it down the motor apparatus, when it is reconverted into kinetic energy.

44. I must now add another question to the one I asked above about the tying up of sounds to objects. Since meaning is taboo in the vocabulary of behaviorism (p. 249) I presume to ask what Watson conceives to be the object substitute of the word *it* in the above statement of his. In the ordinary acceptation of the term it is taken to "substitute" the infinitive "to obtain" with its accessories. So *it* is a smallpiece of behavior standing for a much longer piece, which in its turn represents nothing actually observable as yet in the physiological or behaviorist sense of the term, for the statement "substitutes" a future situation. It will be difficult etc. But the future is out of reach of

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[1]) Principles of Psychology I, p. 5.
[2]) Ibid., part II, ch. XXIII.

any physiologist or behaviorist. They may believe in it like other mortals, but they cannot put it into a test-tube, or under a microscope.

Absolutely hopeless is the behaviorist's position in the face of the negativeness of the conclusion arrived at by Miss Thorson. Can physiology be negative? Can behavior be non-existent? Can a physiologist look at something which is not? That he can form negative conclusions no one will doubt, of course, because he does form them. But they are no negative physiological entities when verbalized, but positive bunches of sound. Sound cannot be negative.

I quite agree with Miss Thorson that tongue-movements can be dispensed with in internal speech "thinking". The fact can be roughly tested by laying the finger on the ridge of the tongue while "silent" speech is being made. There is no question of any of the more pronounced articulations such as that of *th* and *k* being felt.

A better test perhaps can be made with the tongue drawn back as far as possible, or by sticking it out full length, or pulling it about. This keeps the tongue muscles otherwise engaged. The action of the midriff can be stopped by shutting off the nostrils between one's fingers and thumb. In each of these situations internal speech goes on without any impediment.

Nor is this all. It is possible to be whistling a tune, the tongue thus being engaged, and to have verbal images careering through one's mind. It is even possible to be talking, and to have new thoughts forming before one is done talking. This is what happens regularly in continuous speech.

The sentence with its many problems of person, case, number, tense, mood and what not, does not come in for

a special discussion. A casual mention is made of the type of sentence-formation of a boy 2¼ years of age. But Watson tells us how poems and other verbal creations are made. *"The answer is that we get them by manipulating words, shifting them about until a new pattern is hit upon."* (The italics are Watson's) "Why can't those of us, who are not literary, write a poem or an essay? We can use all the words the literary man uses. The answer is, it is not our trade, we do not deal in words, our word manipulation is poor; the literary man's is good."

"How does Patou[1]) build a new gown? Has he any picture in his mind of what that gown is to look like when it is finished? He has not....." "He manipulates the material until it takes on the semblance of a dress. *He has to react to it as a new creation before manipulation stops."*

The reference to Patou is right in so far as the pulling and the manipulating is concerned. But if he did not in his mind possess some patterns of beauty the manipulation would never succeed. It would be like that of a young puppy pulling a rag about. His success is conditioned by the mental patterns. A Papuan or a Hottentot could not do it the way he does. And what is true of Patou need not be true of a Michael Angelo or a Rembrandt. Patou has only the one material to manipulate, and manipulation is easy. If the sculptor proceeded the same way he would not succeed. If a diamond cutter were to try the same method he would soon find himself out of employ. And how about the inventors of type-writers, flying-machines, automatic pistols and poisoned gases? Is there not a great deal of planning, far in excess of the material situation? A great deal of "verbalization" of what has yet no real but only a possible or probable existence? The word-artist

[1]) Patou was a "captain" of Paris fashions. H. M.

had many thousands of words to juggle with. His juggling is conditioned by laws of rhythm, rhyme, assonance and so on, and syntactic forms too. Is a poem a matter of chance arrangement? Suppose the words of "Die Wacht am Rhein" or the "Marseillaise" were carved on blocks of wood for a man to play with, how long would he have to manipulate before "Die Wacht am Rhein" was "hit upon". The artist is "conditioned", says Mr. Watson. Certainly. The poet is conditioned by his own personality, his own mother tongue and nothing else. For three hundred years and more Shakespeare has been "conditioning" men and women all over the world without ever producing his equal.

47. "Behaviorism called for new words in which to couch lectures", says Watson in the Introduction to his Behaviorism (p. x) The first word or one of the first, I presume, was the term "behaviorism" itself. It was coined about 1912. Until then only the elements *behavior* and *ism* had existed without anybody ever dreaming of a union between the two.

Ism, it must be remembered, is only a kind of parasite upon other words, without any independent physical existence. Outside grammars and dictionaries it had no independent behavior. No union could therefore be effected until the suffix had been taken off some other physical body and put on to a new one. Now the initial dissolution of former unions could not be effected in the vocal channels of its inventor. As an organization that bit of behavior which the older grammarians call the suffix *ism*, was conditioned by its big supporters, socialism, radicalism, trade-unionism, barbarism, etc. Of its own accord, *ism* could not have found its way to the desired connection. If so, the marriage would as likely as not have resulted in ism-behavior instead of behaviorism. Of course the union

came about through a bit of intra-neural behavior in the brain of the man who coined it.

It is hardly necessary to adduce further arguments against the behavioristic theory of language. When looking very hard at the word *conditioning* it will be found to look mighty much like the older terms as *teaching, training, educating,* etc. *Being conditioned* is as near learning as near can be. *Being conditioned* in early youth to leave the sugar-basin alone by having one's fingers rapped would seem to be only another term for *being taught.*

The coining of new terms may be necessary whenever through contact with the speech-making community an old word ceases to be distinct. But I cannot see any use for the discarding of the term memory and substituting for it "the retention of verbal habits". *Instinct* is likewise tabooed and for the instinctive cries the infant makes at birth the phrase *"unlearned vocal sounds"* is substituted.

I might ask further, what are the sound-groups *behavior* and *speech* when referred to their own physiological equivalents of a set of articulatory movements. The philosopher from Aristotle downwards says they are bits of consciousness turned into, or symbolized by, other bits of concsiousness. The physiologist has no answer. He observes the articulatory movements, but does not care about the sound-reactions created within both the speaker and the persons spoken to.

48. The most conclusive evidence of the mental powers being in control of the linguistic field is that which is furnished by semaphores, telegraphy, code-signals and so on, all of them "languages" employing symbols which are absolutely conventional, being adopted as modes of communication by mutual agreement between the parties concerned. Telegraphy is made up of a system of dots and dashes, optic or "auditory" as the case may be, by means

of which language is made a "punctual" process, which ordinary speech never is. The learner gathers speed in making his dots and dashes as the activity becomes habitized, but the first stage is a repetition of the earliest school experience, when in learning to read and write one has to gather the whole of a word by patiently piecing its parts together. Yet the mind is always ahead of the hand that carries out its commands. There is no telling the sequence of the successive bits of behavior from the first dot or dash or system of dots and dashes, as Watson would have us believe in his passage on the final stage in our word-organization, i. e. the kinaesthetic stage. The first sound of a word or piece of music does *not* recall the total organization of it, unless that total is verbally present. If a signalman on board a ship at sea has to signal the name *Liverpool* to a neighbouring vessel, the symbols for *l, i, v* etc. must be in consciousness before they can be given to the air or the ether. Conversely, if the interlocutor reads or hears the symbol *l* he is merely put upon the alert. Perhaps he may have *London* suggested to him before the *i* is received, or *Liverpool* when *l* and *i* have been received, but even then he may be wrong, for the total may turn out to be Limerick or Lisbon.

49. Another thing which points to mental, or intra-neural activity as Watson would have it, is the arrangement of the words within the sentence, which may be the reverse of the order of inception, and demonstrates that a certain verbal organization may be held between the incoming and outgoing nerves previous to being discharged. In the sentence *the grass is quite green yet*, which I overheard from a fellow-passenger in a motor-bus, the first active stimulus was unmistakably produced by the greenness of the grass in early winter, when brownness was the more likely thing to expect.

50. A very good example of an idea, or an organized set of stimuli getting stuck in the mind through being temporarily crowded out by competitive excitations is to be found in Byron's description of Lisbon:

> What beauties does Lisboa first unfold!
> Her image floating on that noble tide,
> Which poets vainly pave with sands of gold,
> But now whereon a thousand keels did ride
> Of mighty strength, since Albion was allied,
> And to the Lusians did her aid afford:
> A nation swoln with ignorance and pride,
> Who lick yet loathe the hand that waves the sword
> To save them from the wrath of Gaul's unsparing lord.
>
> Childe Harold's Pilgrimage I, XVI.

From Lisbon's floating on the tide, Byron is gradually associated away to Napoleon. But in the following stanza he remembers about Lisbon, and gives a contrast with the first impression of its beauty:

> But whoso entereth within this town,
> That, sheening far, celestial seems to be,
> Disconsolate will wander up and down
> Mid many things unsightly to strange ee.

There is a remarkable break in the outgoing current in the second and third lines of stanza XVI. The reported *gold* in the bed of the Tagus cannot have been "tied up" to the *poets* but must have been suggested by the word *tide*. Yet *poets* comes before *sands of gold* in the order of "discharge", to borrow James's terminology. It shows that *the organized couple tide and gold were torn asunder intraneurally*, so that verbalization and excitation were not collateral.

For further examples I refer the reader to sections 30 and 31 above. I think these facts do not fit the behaviorist theory. There is but one conclusion. The word, or rather the image, *gold* was stored in the mind until its turn for discharge arrived. But this overthrows James's and Watson's theory as to the impingement of the incoming nerve and its effect upon the outgoing nerve, for the effect may be uttered before the cause, as in 31.

51. On pages 231 ff. Watson gives an interesting exposition of how verbal habits develop. "It is quite obvious in the child of three that the word 'mama' is called out (1) by the sight of the mother, (2) by the photograph of the mother,(3) by the sound of her voice, (4) by the sound of her footsteps, (5) by the sight of the printed English word 'mother', (6) by the sight of the written English word 'mother', (7) by the sight of the printed French word *mère*, (8) by the sight of the written French word *mère*, and by several other stimuli such as the visual stimulus of her hat, her clothes, her shoes." "As the child grows up, it establishes a conditioned word response for every object and situation in its external environment. Society in the form of parent and teacher and other members of the social group arranges this." (p. 233).

The facts are very important from a semantic point of view. Not only words but even things possess suggestive powers. But one had better be on one's guard against generalization. I think it quite possible for a very clever child to call out *mama* at the sight of the word *mère* when told that they are substitutes. The union of *mère* and *mama* is a substitute or association of the first degree. But it takes the average child some time to discover it, and the meaning of *mère* has to be learnt. I remember many a jubilant shout from five-year-old learners when discovering that

the written Dutch word *oom* was a substitute for *uncle*, the real uncle that is. Now their exultation is not aroused by the sight of the written figures, which are cold and meaningless and cannot stir emotion. What tickles the glottal nerves into activity is a mental union between the written and the auditory symbols, their so-called fusion.

52. The magic force of *mère, mother* and *mama* no one is likely to contradict. But — confining ourselves to French homonyms — how about *le tour* and *la tour*; *sans t* and *santé* in "*Santé* n'est pas *sans t*, mais maladie est *sans t*", to mention no more of the innumerable puns, "spoonerisms" and so on which are launched every day in comic papers. What about the famous *well-boiled icicle* for *well-oiled bicycle*?

If the behaviorist ventures upon the explanation of words, he must find an account for the origin of this type of new behavior, which is, however, the product of purposed activity, and consequently lies outside the field of natural science, and outside the range of behaviorism.

53. The reader will pardon me for adding one or two other symptoms that prove the presence of intra-neural activity. The very simple advertisement *Get it at Harrod's*, though easy enough *to understand*, is likely to give the average Dutchman pause if asked *to say* in his own language precisely what it means. Yet the sub-units are related to the aggregate in exactly the same way in English as they are in Dutch, the order of the words being identical. The creation of such a conscious mental content in the hearer's mind is a linear process because the words can only be cognized one by one; their re-delivery in Dutch is also a linear process because the elements cannot be delivered, except one by one. So the question remains as to what happens between the conception of the sentence in its English form, and the reproduction of it in Dutch.

54. Take an analogous sentence, e.g. *Get your boots at Waukinphast's.* The first word to enter the hearer's consciousness is *get;* owing to its many assocations its meaning cannot be properly *understood* until the other parts of the sentence have been perceived, that is to say until *the whole of the sentence has been cognized,* or shall I say verbalized? Anyway, assuming that the hearer is acquainted with the elements, the whole of the sentence is in his mind before he can react upon it in the vernacular. Assuming further that the items continue in his mind in the order they were perceived or "verbalized" the question immediately arises as to which word is to be made the opening part of the translation. By the time *Waukinphast's* is sounded, *get* has moved into the margin of consciousness, and probably, *your boots* has *too.* If therefore the sentence is to be rendered into Dutch (or repeated in English for that matter) *there must be a mental reversion of the speaker's attention to the opening word.* Allowing two seconds to elapse between the hearing of the first element of the English stimulant, and the production of the first word of the answer, it is interesting to note that an electric spark could travel more than a dozen times round the earth in the same time. The reaction to the opening apart of the stimulant is therefore retarded until the successive items on the wave of auditory stimulations have been distinguished and re-arranged after the Dutch fashion. They cannot be turned into speech until then. Now this re-arrangement must be a sequential process if speech is to be articulate. For the facts of metathesis and aphasia show that there is a certain correlation between the process of co-ordination in the brain and the muscular movements which produce sound. Motor responses may proceed at different rates in different individuals, but there are limits which cannot be exceeded

if speech is to answer its purpose of creating within the hearer's mind the same impressions as those by which the speaker's activities were excited.

55. Summary.

As the analytic aspect of language cannot be adequately dealt with by the behaviorist, because it does not come within physical measurement, one half of the science of speech is practically outside his sphere. And as sentences are said to be unpremeditated productions of random word-manipulations, behaviorism furnishes the teacher no instrument of transfer beyond what nature gives to illiterates and savages. For no school-instruction can ever wholly get away from the necessity of systematization. It is system that makes a school.

The findings of the behaviorist, many of which are interesting enough, will never become of any educational use until he discovers that no word, no organization of articulate sound has ever come out of a test-tube, but proceeds from that very region to which his principle bars admission, the region where incoming stimulations are verbalized, i. e. converted into those stimulations of the motor nerves which start the vocal muscles and produce objective organizations altogether different from the subjective stimulus. If this were impossible, behaviorism with all its train of new terms would never have been born. It owes its existence to mental activity, as do all new inventions with their correlates of words and sentences. By its negation of mental causality behaviorism is a danger to all instruction, for real instruction appeals to the mental forces and mental activity.

CHAPTER IV.

THE SENTENCE.

1. Leaving on one side such idiomatic formulae, as *How do you do?* and others of the kind, the only linguistic phenomena of regular recurrence are those forms of accidence and syntax by means of which single words or sequences of words are converted into that great intermediary of communication, the sentence. They act as representatives to the mental processes which unify the random elements of a mind-content into an organized whole. They may take the form of a copulative verb, as in *Our dog is dead;* they may be expressed by external or internal modifications of the organization of words or word-groups as in the German *der Mann, des Mannes; ich schreibe, ich schrieb;* in the French *je parlerai, nous parlerons;* in the English forms *you speak* as against *do you speak?;* or in the Latin *scribo, scribor;* they may be expressed by the intonation of a sound-group as in *Vader boos,* or *Pussie in the basket,* which, when a statement of fact, has the same intonation as *Vader is boos* (*Dad is angry*), *Puss is in the basket* [1]); they may be expressed by some specific arrangement of the elements of the sentence. *The dog rescued the little boy,* as against *The little boy rescued the dog.*

2. It is easy to see that many relationships can be infinitely varied. Language, consequently, is inadequate to represent

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[1]) Verbless combinations!

them all. By altering the position of an object on a table their mutual relation changes with each displacement. Yet English, like other languages, has but two or three forms *on the table, upon the table, on top of the table* to represent the total number of spatial figures that may be thus obtained. Most relations of time can be varied in a similar manner.

About seven o'clock, near seven, before seven, and after seven can be infinitely graded as regards their relation to the point of time to which they refer. They are therefore relative terms, denoting infinitely variable extensions of time. *At seven o' clock,* on the other hand, marks an absolute value. Relational words or word-groups therefore represent abstractions, as much as class-nouns such as *horse, cow, table* etc.

3. The exteriorization of mental combinations by means of sentences is essentially the same as the expression of simpler mental activities by means of single words. The difference is one of quantity. Sound-thing combinations such as *thing-dog,* or sound-sound combinations such as *sound-g* [1]), or *dog-chien* when heard for the first time, produce three reactions in the mind, two of the things or sounds themselves, and one of their being associated. Their combination resembles that of binary compounds in chemistry. Their ordinary syntactical equivalent is seen in sentences of the type *That is a dog, That is a g, Chien is dog.* But when a dog is said to be old there is recognition, first of a visualized unit *dog,* secondly of an auditory unit *dog,* thirdly of the quality *old,* and fourthly of the word *old.* Their co-existence in the mind as an organized unit is further experienced as a fact. Hence there are five

[1]) The musical value *g* is meant.

reactions. If next the dog is observed to limp, there is a further extension to the chain of mental events, which is paralleled by a corresponding extension of the sequence of words within the sentence, *the dog is old and he limps.*

4. At first sight it may seem difficult to understand the part played by a person's judgement in effecting sentences of the class *that dog is old,* as both the elements of "dogness" and oldness are simultaneously perceived about the same object. Yet a little reflection will show the mind's part readily enough. For one thing the words *old* and *dog* must both of them be within recall; secondly the word *old* is suggestive of stiffness and other attributes of old age, and the term *dog* of that set of spatial impressions which go to make up the *dog*-idea, independently of colour, breed, and other attributes. A decision having been reached as to this state of affairs, the next problem is how to translate mental assent into communicative sound, a problem which in the initial stage of speech it takes no end of inferential activity to solve. Compare IV, 9, ff.

The psychic link in sentence proceedings is seen even more clearly from negative sentences of the type *That dog is not old,* in which the ideas of "oldness" and "dogness" are undeniable co-existences in the speaker's mind though not united in the object thought of.

5. The complications of the spoken sentence do not end here. Infants have their first thing-sound combinations well established on the perceptual side, quite a long time before reproduction is attempted, that is to say, before the motor apparatus is intercalated, and the same difference between passive and active experiences is observable in every person who at a later age attempts to master a foreign language. The reason is obvious. Speech is action, whereas sounds heard are passive events, passive at any

rate in so far as no muscular reactions are generated. Speech is a physiological reaction of the vocal apparatus, following upon successive stimulations of the cerebral nerve terminals, sound impressions may remain just what they are and where they are in the brain.

The spoken sentence is therefore a unit of wider extension than its mental antecedent. The latter is only internally heard or seen or felt [1]*), the former is also actively perceived by the kinaesthetic sense,* because it co-ordinates with the former experience a reaction of the motor nerves, and finally it ends in sound again and comes within perception by the external sense of hearing. Now motor impressions exist or may exist in complete independence of the other senses, as appears in different ways. First from the speech of the deaf and dumb, who have no auditory impressions to guide them, but only tactual sensations; secondly from the effect of certain brain-lesions, which may seriously affect or even destroy, the capacity for speech, when the other senses are left intact; and thirdly from the fact that words can be internally heard, seen and spoken without exciting muscular reactions of the voice apparatus. The proper functioning of the motor apparatus is therefore the ultimate condition of speech.

6. The psychic aspect of speech proceedings is easily seen now to be the joint product of intellective and volitional factors.

Whole sentences can pass the focus of attention without a single voice-muscle being moved, the physiological reactions being confined to the cerebrum. But when audible speech is to be made, a constant supply of motive

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[1]) Smell, taste and touch are left out of consideration so as not to complicate the argument.

energy must be generated in the brain for the innervation of the outgoing nerves, and no word or sentence can be spoken until its sound-form is recalled and re-associated to its motor-form, that is to say, to the corresponding sequence of physiological reactions. As the motor process must be constantly varied to follow the ever varying mental "film", *normal speech, unlike walking or other natural abilities, can never be wholly automatized.* Walking can be regularized, speech cannot. A person walks without any consciousness of the movements of his legs, because each footstep is like its neighbours in the sequence. But the tongue rarely repeats the same movements twice over, because sentences are hardly ever the same.

What resembles reflex activity in speech is the result of habit alone. A song, even a poem of considerable length or a prose-passage, can be so conned, and by constant repetition so closely associated to the motor sense, that the bare mention of the opening words is a sufficient stimulant for the whole of it to be mechanically reproduced, with no more exertion than *Good morning!* or *Good night!*

Yet, closely as they may be connected and fast as they may come, speech associations never harden into inseparable unities. It is the mind by which their elements are held together. Either member of a thing-sound combination is apt to get beyond recall through aphasia [1]), or forgotten through disuse. The power of forming sentences too, is

[1]) Compare for the various symptoms of aphasia: Henry Head, Aphasia, An Historical Review (Brain, Vol. XLIII, Part IV, 1920); and Speech and Cerebral Localization (Brain, Vol. XLVI, Part IV, 1928); Dr. E. Fröschels, Psychologie der Sprache, Ch. I, Leipzig 1925; A. A. Grünbaum, Aphasie und Motorik, Berlin 1930; Dr. E. D. Wiersma, Capita Psychopathologica, p. 630—645, Groningen 1931; K. Goldstein, L'Analyse de l'Aphasie et l'Etude de l'Essence du Langage, Paris 1933.

liable to be injured by aphasia, when the memory of words is left intact. Mental fatigue and other causes may have a retarding influence upon the associative process, as will be shown below.

The commonest example of "forgetfulness" is probably the readiness with which foreign correlates to native words are forgotten, even by the best pupils at school.

7. The connections effected within the mind differ qualitatively with the character of their constituent elements, and with the different ways they can be looked upon. Thoughts can therefore be classed under different heads as perceptual, conceptual, spatial, temporal, causal; affirmative, negative, conditional and so on, all according to the character of their elements and the mental attitude towards their combination.

As regards the character of the elements involved, the commonest classes of thought are based on *what* things are, *how* they are, *where* they are, *when* they are and *whence* they are. As regards the mental attitude towards completed thoughts they can further be classed, as far as they are judgements, as *positive* or *negative* according as a given combination is or is not mentally assented to; or as *modal* when it is viewed as something desirable, probable, possible, imperative, or merely as a fact.

Thoughts differ quantitatively as regards the number of articulations or joints of which they are composed, two being necessarily the minimum of each combination. The thought correlate of the statement *Gold is yellow* is a binary compound; *the boy rides well* a triple one consisting of two joints, two acts of thought, that is, the one connecting the images of *boy* and *riding*, the other the image of *riding* and the qualitative idea expressed by *well*. Further links may be added to the chain when ideas of

space, time, causality or others enter the conscious field. Very important quantitative extensions arise when a number of substances and attributes are mentally grouped together and treated as units of thought to serve for subjects or predicates as the case may be. Thus I remember reading of *the Mediterranean end of the Cape-Cairo railway*, and one day I heard a friend of mine say, *"I have to M. C. a dance to-night"*, i. e. to act as master of the ceremonies at a ball. Complex sentences arise in a similar way through each of their members being regarded as single units of thought.

8. Words and sentences, then, are first of all concerned with the intellectual distinction of substances, and their attributes of quality, quantity, number; of relations of space, time, order, causality; of person and sex. But the form of a word or word-group may also be affected by emotional categories of love and fear, joy and regret, surprise and pity; and by volitional items of will, wish, purpose, command, and others, in which emotional and intellective elements are found together. As each combination is a mental event, it is bound to generate some degree of pleasure or displeasure, which is generally expressed by means of intonational and emphatic devices, or by auxiliary words and other grammatical expedients.

9. The modes of mental activity may or may not be reflected in the forms of individual words, but all sound-complexes must necessarily be diversified some way or other, if their different mental correlates are to be kept distinct. Compare: *He had mended his watch* and *He had his watch mended.*

In infant language words are little liable to structural modifications, and some fully developed languages, such as Chinese and others, have stable word-forms too. As

far as their oral articulation is concerned, English has only a few traces of inflection left. Dutch has also cast off the greater part of its older system of inflection, whereas German has preserved quite a considerable number of them. The Slavonic languages are rich in inflections, and Arabic shows many modifications of words effected by internal vocalic and consonantal changes. [1])

When words are not affected in their oral structure, as is the case in Chinese, they may be modified by glottal variations or emphatic devices, and the larger complexes in which they occur are open to all sorts of alterations by having their internal arrangement modified. In this way for example, the question *Is he an Englishman?* is distinguished from the statement *He is an Englishman*, although the different intonation is of more importance than the order of the words. *You are an Englishman?* can be uttered on the same curve as *Is he an Englishman?*

10. Mental combinations can also be regarded as facts or non-facts, and in other subjective ways, thus evolving the many forms of modality. As facts, viewed by themselves, are necessarily stable values, whereas non-facts are open to the operation of imaginative activity, it is quite natural that non-fact or thought-forms should show the richest development of the two in subjunctive, conditional, compulsive, optative, imperative, permissive, moods and others.

11. Examples. [2])

The forms of nouns may be affected by the mental process according as they are looked upon as the agent of an action, or the bearer of some attribute; as directly or indirectly affected by an action, an event or a state; as predicating

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[1]) Cf. [liga: m] and [laggim], bridle (noun) and to bridle (verb.) W. H. T. Gairdner, Egyptian Colloquial Arabic, p. 150, note 1.

[2]) The examples are not meant to exhaust the subject.

something of another substance, or as being in some spatial, temporal or instrumental relation to it. Or, speaking in grammatical terminology, nouns are, or may be, modified to show their different functions in the sentence. Subjects have special forms in German, *der Mann* [1]) always marking a subject relation, *den Mann* a direct object, *dem Manne* an indirect object, and *des Mannes* various shades of possessive and cognate relations. Old English possessed instrumental forms of the definite article and of the interrogative pronoun, of which the Modern English *why* is a direct descendant.

Modern English marks the difference between subject and object relations chiefly by position, e. g. *The boy did not see you* as against *You did not see the boy*. Nominal predicates on the other hand often have special forms in English, e. g. *He is a soldier*, as against the Dutch *Hij is soldaat*, which has no indefinite article. Compare also the English plural in *Both my sons are sailors*, where Dutch generally employs the singular form.

Genitive relations of various descriptions can be expressed by means of inflexion in English, as in *King Saul's father's asses*, *Gladstone's speeches*, and *Dr. Crippen's execution*. Instrumentality is expressed in English by several prepositions, *by* and *with* being the commonest. So it is expressed in Dutch, German and French. Hence to write *with a fountain-pen*; to be killed *by lightning*. Russian has a special instrumental case. [2])

Quantity is expressed in various ways. German and Dutch mark it by position, as in *eine Tasse Tee*, *een kop*

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[1]) As there is no logical difference between inflectional and other modifiers, they are given indifferently.

[2]) Prof. Dr. Erich Berneker, Russische Grammatik, § 18.

thee. Compare the English *a cup of tea,* or the French *une tasse de thé.*

Quantification of the subject is often expressed in English by means of the definite article, the omission of which is mostly an indication of the noun being taken in a general sense, cf. *Youth is the spring of life,* in which *spring,* being taken in a special sense, is used with the article. Quantification also affects adjectives in their various positive, comparative and superlative forms.

As regards number English differentiates only between *oneness* and *more-than-oneness.* Old English possessed remnants of *twoness* in some of its pronominal forms. Many Melanese languages of to-day possess no fewer than four number-forms to mark oneness, twoness, threeness and more-than-threeness. [1])

Quality shows its influence in the form of many adverbs. Compare *The girl sang beautifully,* and *The girl had a beautiful voice.* Dutch, less particular in this respect than English, makes no difference as a rule between adverbs and adjectives. Hence *Hij doet groot* and *Hij is groot.*

If the term *quality* is justly employed in logic as a principle of division between affirmative and negative statements respectively, mention ought to be made of the copula: *he is an Englishman* versus *he is not an Englishman; ce fer est bon* versus *ce fer n'est pas bon;* and of the verb forms in *I like cocoa* and *I don't like cocoa.*

Space distinctions have a good many prepositions to express their relations to persons and things, as *on, at, under, by* or *near the table.* Sometimes there are special words as *where, whither, whence,* to mark *rest at, motion to* and *motion from* a place. Nearness and remoteness are

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[1]) Ernst Kieckers, Die Sprachstämme der Erde, p. 122.

expressed by *this* and *that, dieser* and *jener, celui-ci* and *celui-là,* and other pronominal forms. Russian seems to have a locative case-ending, occurring in connection with certain prepositions. [1])

The difference between the spatial ideas of distance and direction is reflected in the English terms *nearest* and *next, nearest* referring to what is the smallest distance from the speaker, *next* to what comes first in the order of progression.

The last two terms, like many others, refer to space as well as time. This is because *space* and *time* are inseparably related where movement is concerned, so that *first* could develop from what originally was a spatial term.

Time, like space, can be infinitely graded. It may be regarded as a point of time, in the past, present or future as in *at seven o'clock;* it may be regarded as an indefinite period related to some point of time in the present, past or future in different manners, as in *near seven, towards seven, about seven;* it may refer to an extension reaching up to a present past or future, as in *We have lived* here these twenty years; Mother *had been dead* ten years. *I shall not have done writing* before midnight. As time would be non-existent in default of perceptual supports, it is always connected with things that can be perceived, and act as sensory boundary-posts to time ideas. It is especially the verb, reflecting the temporary attributes of movement, by which the manifold distinctions of time are expressed.

Attributes can be looked upon in different ways. If considered permanent, their natural linguistic correlate is the adjective. If regarded as accidental, it is the verb by which

[1]) Erich Berneker, Russische Grammatik § 18.
[2]) J. H. G. Grattan and P. Gurrey, Our Living Language, Ch. XXXV.

they are mostly expressed. The distinction is not an absolute one however, because adjectives are often converted into verbs and verbs into adjectives. But it is a convenient one for classification. We will therefore adopt Sweet's distinction of attributes and phenomena [1]), reserving the former term for permanent, the latter for non-permanent conditions of substances.

12. Attributes can be conceived as forming mental units with the substances to which they belong, as in *a black horse, a tiny little mouse.* The relation between the two elements can also be the result of two separate experiences and a consequent act of comparative thought, as in *the water is not fresh, it is brackish; the roads are impassable.* This difference between the so-called attributive and predicative use of the adjective may be shown in separate forms: *der alte Mann* as compared with *der Mann ist alt.*

Phenomenality can be looked upon as non-progressive, i. e. apart from any definite time, as in, "Water *freezes* at 32° Fahrenheit"; as progressive in, "The water in my wash-basin *was freezing*"; as incomplete in, "For sixty years Eno *has been helping* men and women all over the world"; as complete in, "*I have written* half a dozen letters to-day"; as habitual in, "Boys *will be* boys".

Some languages have special forms to bring out the momentaneous character of an action. "Thus in Greek the present infinitive *gelân* means 'to laugh', the 'aorist' infinitive *gelâsai* means 'to burst out laughing'." [2])

The terminative part of an action or its reiterative character can likewise be shown by inflection or other grammatical expedients. Traces of reiterative forms are

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[1]) H. Sweet, A new English Grammar, § 29.
[2]) Sweet, A New English Grammar, § 283.

seen in the frequentative verbs *to twitter, to flicker, to to cackle, to clamber* and others.

Action can also be viewed in its relation to its subject and object, thus giving rise to the grammatical category of "voice", active when the grammatical subject is regarded as the doer of the action, passive when directly or indirectly affected by it.

The distinction is a psychological rather than a logical one, the passive being mostly used when the "sufferer" of the verbal activity is more in evidence than the "doer", and is therefore given "pride of place", that is to say front-position in the sentence.

Sometimes the doer disappears altogether from the conscious field, as in *Mails are despatched twice a week.*

13. The logical distinctions of genus, species, difference and accident have separate English forms sometimes, e.g. A queen is but *a woman; Every woman* is not a queen; Six is *less* than seven; Mrs. Blank had no idea that she *was being* a nuisance.

14. Fear, surprise, joy, regret and other emotional categories not only have different names in language, they are also liable to affect syntactic groups. Compare *I am sorry I forgot about our arrangement* and *I am sorry I should have forgotten about our arrangement,* the former being a plain apology, the latter implying some thought about the reason of the mistake. *We fear the news is only too true* [1]) and *We fear we may lose our way* differ in the former sentence expressing conviction, the latter suggesting mere possibility.

Will appears as subjective volition in *I will live a bachelor;* as a command in *Forward-march!;* as referring to a third

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[1]) C. T. Onions, An Advanced English Syntax, 68e.

person [1]), other than the speaker or the person spoken to in *You are to give this to John;* The doctor says *he is not to be worried.* [1])

15. What is probably the strongest evidence of psychic agencies in sentence-formation is to be seen in the development of what is called modality. The conditional sentence *If you are an Englishman, you will understand,* may mean *I believe you are an Englishman, so you will understand.* The statement *If you were an Englishman you would understand* contains the same sensory elements, but their combination is a mere thought, the person spoken to not being an Englishman.

The final clause in "I wrote and told him a week ago, so *that he should have plenty of time to make up his mind*" marks the making up of the man's mind as a purpose the speaker has in view. *I wish I were a mile hence* implies that the being a mile hence was regarded as a desirable thing by the mayor of Hamelin-town. Moods give expression to a person's attitude towards a given mental situation. An interesting instance is furnished by the use of the subjunctive mood in indirect narration in German. It follows from the fact that in narrating in our own words what is said to us, as in *He said he was ill,* the being ill cannot be stated as a fact but only as an idea suggested by another. Hence the German subjunctive mood in *Er sagte er sei krank* in indirect narration, as against the indicative *Ich bin* in *Er sagte: "Ich bin krank"*, of direct speech.

16. As speech activity consists in the organization of sound into symbols of mental phenomena, linguistic thought may be defined as that form of mental effort by which

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[1]) H. Poutsma, A Grammar of Late Modern English, Part I[1], § 29.

sound-associates to mental organizations are developed. The following tests will give some idea of the amount of thought it takes the average beginner to find such sound-associates.

One of my boys, after repeating the English alphabet in *nine* seconds, was full *fifty* seconds finding the English names to the twenty-eight written symbols occurring in the statement *Alice suddenly saw a white rabbit.* Yet he made only one mistake when the [*y*] of *suddenly* was misnamed [*ai*].

Another boy said the English alphabet in twelve seconds without blundering at all, but took thirty-five seconds to enumerate the twenty-six symbols of the written statement *Our village has only one square,* misnaming the *i* and the *g* of village.

A third one said the English alphabet in twenty-seven seconds, with five mistakes.

The Dutch alphabet was repeated by two of the lads in five, and by the third in six seconds. So the first thing which the experiment suggests is that reproduction in Dutch came almost twice as fast as in English. A little allowance must be made for the fact that the English alphabet exceeds the Dutch in length, *w* having three syllables in English and only one in Dutch. The number of sounds, too, is larger in English, *g, h, j, q, y,* having each one sound more than their Dutch equivalents. But for practical purposes the difference is negligible. We are fully justified in concluding that the greater the familiarity of a sound the easier is its reproduction.

Much more important, however, is the fact that, when the written symbols were arranged in a different order from that of the alphabet, it took the boys much longer to find their sound-correlates. In none of the experiments,

which extended to about two dozen pupils, did the naming of the written symbols in random sequences proceed as rapidly as in saying the alphabet. It follows that each fresh arrangement of the letters has to be repeated a number of times before mental resistance is reduced to nothing, and the complex so fastened in the mind as to be capable of reproduction at the same rate as more familiar sequences. Dutch learners have no end of difficulty as a rule in bringing forth such sequences of sounds as those contained in *Chancellor of the Exchequer,* because of their non-occurrence in the mother tongue.

18. The same argument applies to the arrangement of words within the sentence. Dutch scholars will never get hold of the English do-forms in negative and interrogative sentences, except by constant repetition. Out of the hundreds of mistakes I have come across in twenty years of teaching-experience I may be pardoned for mentioning just one, which is fairly representative of all the rest. It was made by a girl-pupil, whose attainments for English averaged about seventy per cent. In a certain end-of-term test paper she made the mistake of writing *Speak you?* for *Do you speak?*, though in her exercise-book and her reader, in the course of about twelve months of training, she had come across *ninety-one* instances of interrogative, and *ninety-seven* of negative do-forms.

19. It may justly be argued that the greatest of the disturbing factors in the case of this girl was the influence of the mother-tongue, *Speak you?* being an analogue to the Dutch *Spreek je?* The objection, however, meets only part of the matter. For very similar resistances are experienced in naming promiscuous sequences of letters in the native tongue. One boy for example, after rattling off the Dutch alphabet from a to z, at his maximum speed within five

seconds, took twelve seconds to read it from z to a, and was nine seconds telling off the twenty-six characters of a certain Dutch statement. The difference is easily accounted for. In repeating a series of familiar sounds, syllables, words or sentences, their association having become a hard and fast one, they will assume the involuntary character of all such associations, judgement interfering only when mistakes are being made. In naming unfamiliar sequences on the other hand had each individual sound has not only to be identified, but the organs of speech have to be forced through new transitions, which are bound to provoke new resistances. The transfer from *a* to *b* for example presents a different muscular reaction from that encountered in passing from *b* to *a*. Hence, in the sequence *z*, *y*, *x* there is much more physical resistance than in *x*, *y*, *z*. Thus each new word is the joint product of judgement and of will. Of judgement in the arrangement of the ultimate elements, of will in overcoming the physical inertia of the muscles. If a word is read from right to left its identity is destroyed beyond recognition. Words are sequential magnitudes and cannot be mentally unified but in one definite way. As the phonetic material of a language can be arranged in countless millions of fashions and as the mental situation likewise presents a never ending variety of complexes, it follows that speech can hardly ever be *cliché*. In fact new forms must from the psychological facts of the matter be constantly developing, and judgement kept alert to tell what must and what must not be spoken.

20. As shown in the earlier sections of our paper, infants experience a difficulty in acquiring unfamiliar sound-complexes. It is only very gradually, as their conscious powers expand and their analytic and synthetic powers grow along with these, that the art of repetition is mastered

by them. There can be no rearrangement of ultimate sounds, nor of ultimate words, phrases, or sentences, until the complexes in which they have been first observed are disintegrated, and each element comes to stand apart within the memory as an independent unit. If a person's memory of a complex is too strong to allow of its disintegration, recourse is had to mechanical means in recalling a word. If *six* for example cannot be dissociated from its neighbours *five* and *seven*, pupils when in trouble about the identification of the sound correlate to the symbol 6, may often be heard to repeat the numerals one, two, three etc. until six is reached. The self-activity of the infant is seen in its struggles to imitate the sounds it catches from the lips of surrounding speakers. It is seen again at school, when the art of reading and writing has to be mastered. If once an auditory complex like *bad* has been analysed into its phonetic units *b*, *a*, and *d*, and these units associated to their script forms and committed to paper, the analysis of *dad* and *had* can be attempted. In most cases the struggle continues for a considerable time, and let the will to learn be ever so strong, judgement has to direct the muscular activity of the hand and fingers in the endeavour to overcome the spatial difficulties presented by the print characters *b* and *d* for example. Surely, unless the will can be credited with knowing a *b* from a *d*, it is the judgement's part to superintend the operation.

21. The operation of the judgement is equally evident in speech. It is best revealed perhaps by the so-called slips of the tongue. Metatheses for example leave no room for doubt that the whole of a word is cognized before being given to the motor-apparatus. A few recent examples may be mentioned: shut up > shup ut; Quaker Oats > Oaker

Quates; pasklaar > klaspaar; nagedachtenis > dagenachtenis; sorry, sir > surry sor; *God gave us the sea* was read as *God save us the gea; the boys are flying their kites* as *the boys are kying their flites*. They were all unconscious slips. But slips or no slips of judgement, the words affected were in consciousness before being thus transferred into physiological activity of the voice-musculature.

The following incident is instructive too. Among the writer's pupils were a Mul (məl), and a Musch (məs). Adressing Musch one day, the name became confused with that of Mul, but the confusion was noticed before either name was fully out, only the first two sounds being completed. After faltering twice about *Mə—Mə*, recognition was complete and the corresponding judgement pronounced as *Məs*.

Instances of words being thus held in the mind till their proper form has been decided on, are of frequent occurrence. Sometimes indeed the whole of a word is spoken before it is discovered to be wrong, just as in writing the wrong word is apt to slip out of the pen. But whether the word be right or wrong, the intellect is the leading function, for the will, much as it may be affected by the *meanings* of words and sentences, is absolutely indifferent to their *forms*.

22. The results of the tests clearly indicate that what is called involuntariness of speech is in reality the limit of associative speed, differing with different individuals and under different circumstances. If a boy takes one third of a second to produce the name of *t* in a given sequence, when under other circumstances he can say it in one fifth of a second, the difference is a matter of psychic resistance. For allowing the velocity of neuronic stimulations to be 120 metres per second, it would not take the optic and auditory images of *t* more than one thousandth of a

second to meet within the brain, the distance between their cortical centres being a matter of a few centimetres only. Now the resistance causing the delay, was not in the boy's vocal apparatus, because a common consonant like *t*, must have travelled down his vocal nerves and muscles thousands of times. Nor was it in the receptive apparatus, which had transmitted it an equal number of times to the efferent nerves. Not being in either the optic or the auditory centre, the difficulty experienced in associating the two was in the associative process itself, which evidently had to be freed from certain encumbrances arising from the different surroundings of the letters in the former and the latter sequence.

23. Speech is a spatial performance in the mouth-cavity, as writing is on paper. In the latter case the muscles of the hand and fingers are guided by the eyes, in the former case the muscles of the tongue, the lips, the uvula and the glottis are guided by the kinectic sense. Eliminate the optic sense in writing and it will soon be an indiscriminate blur. Eliminate the kinectic sense in speech and it becomes inarticulate. [1])

24. The mistake referred to in § 14 and § 15 deserves some further comment. Nobody is likely to question the subconscious influence of a Dutchman's native tongue if he says *Speak you French?* instead of *Do you speak French?* The important point to note, however, is that the form of the question was not decided by its matter, which was English enough, but by the mould into which questions of this class are normally cast in Dutch, that is by an abstract cognitional residue, left in the mind by the memory of past experiences.

These residues (there are many of them!) decide the

[1]) In normal speech the kinetic sense is practically fused with the auditory.

form of every sentence, and operating subconsciously, they will, through getting confused with other syntactic links with which they are formally associated, leave room for mistakes to slip in and variations to occur. [1]) All learners whether native or foreign, have a difficulty in discriminating sentences of the type *He is going, He is gone, He is to go, He has gone,* and many others, both actively in speaking or writing, and passively in hearing or reading.

Even such plain empirical statements, therefore, as *Our roses are fading* are based not only upon the relation between the roses and the fading on one hand, and their corresponding sound-equivalents on the other, they also involve abstraction from associated syntactic forms. In fact, the Progressive phrase *are fading* and the Perfective *are faded,* are so nearly associated, that if there is any truth in the localization theory, their physical correlates must be in practically the same spot in the brain.

Even stereotyped mental situations such as are expressed by *Do you take milk and sugar?,* or by the elliptic *Milk and sugar?* — but certainly, all non-common linguistic activity presupposes thought activity of some kind. Each non-stereotyped state of consciousness must be analysed before vocal reaction can be made. As the mental situation is in a state of perpetual change, all articulate speech is conditioned by thought activity in two respects, first in the organization of the mental antecedents, and secondly in the innervation of the voice musculature. If some such empirical judgement as *The street is up* has been completed, the innervation of the voice muscles starts where thought began, that is with

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[1]) This, I believe, is the explanation of the grammatical latitude observable in living languages.

The street. For speech, like thought, is of the nature of a linear extension, having distinct beginnings and distinct endings [1]), and the will cannot be credited with knowing either.

25. Sentences are often habitualized into mere associations to the mental situations they represent. That Canterbury is in Kent, for example, will be an established truth within the minds of those who know. But for a person who does not know and wishes to find out for himself, the recognition of the term Canterbury and its location within the county of Kent are acts of thought. For the place-names on the map that pass successively his focus of attention are all of them compared with Canterbury. Once Canterbury has been identified, its situation within Kent, or its relative position to London or some other space coordinate must be settled. The same argument is true of such statements as *Dinner is at six o' clock.* It may be a mere association for the waiter in an hotel who says it in reply to a query from a hungry guest. It is a very complicated act of thought for a man who pulls out his watch in order to find out when dinner is going to be. Compare also such statements as *Blank died of heart-failure,* the perceptual elements of which must have been cognized by the doctor and found to be related as effect and cause, before pronouncement can be made.

26. It is not surprising that language should often diverge from logic, because the latter is only concerned with the forms and canons of thought, which rule supreme only where logical precision is required, that is in the province of science.

Outside the scientific sphere however, language is not

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[1]) Compare J. Dewey, How We Think, I, 3.

tied down to logical precision. The following sentence: "She was so very small, *she had to come in twice before you could see her*", conveys a logical absurdity, as the coming in twice of a girl adds nothing to her visibility. Yet linguistically speaking the statement is as much a fact as Browning's well-known lines:

"You looked twice ere you saw his breast
Was all but shot in two." [1])

Conditional clauses of the class *If I was you*, when referred to logical standards, are no less absurd, because *you* can never be made an affirmative predicate to *I*. They cannot be objectively compounded. Yet in language such compounds are quite common, and quite „logical" in a way, because implying a negative *I am not you*.

That *Water is wet* is a truism to anyone who understands the similarity of the ideas expressed by the two words. Yet it is as valid a statement as *Honey is sweet*. *A man is a man* is tautological in form, yet subject and predicate are differentiated in sense, the meaning being *Any male possesses manly qualities*. Compare such statements as *business is business, a foreigner is a foreigner, the detective was no detective* and the differentiation in the meaning of subject and predicate is easily seen behind their identical sound values.

All logical propositions consist of two terms, whereas sentences often have only one, as in *Speak!*, and more frequently more than one for each member of the statement, as in Southey's

He came to ask what he had found,
That was so large, and smooth, and round. [2])

[1]) R. Browning, Incident in the French Camp at Ratisbon.
[2]) R. Southey, The Battle of Blenheim.

which has a triple predicate, whereas the statement "If that boy grows up *he'll be either a giant or a liar*", has two predicates alternatively connected, one being right if the other is wrong. In logic ultimate genera or species cannot be made the subject of further predication, but in language the names of such elements of thought can have several things predicated of them. *Being* itself for example, is incapable of further extension because there is no higher class of things to which it can be made to refer — but the term *being* can be said to consist of four sounds in speech and of five characters in print; to be the present participle or the gerund of *to be;* to be equivalent to the German *Seiend,* and so on.

Logical formulae have both their terms expressed, language is often elliptic. Judgements are logically reducible to a few clearly defined types that can be represented by the formulae *all x is y, all x is not y, some x is y* and *some x is not y.* [1]), the copula, whether affirmative or negative, being invariable. Language on the other hand diversifies the copula so as to adjust it to the person (I *am,* he *is*), the number (I *am,* we *are*), the tense (I *shall* be), the mood (I *were,* I *should*), and the aspect (you *are being* foolish) of the predicate; and mostly in verbal predicates no copula is required at all.

The principal difference between language and logic is in the latter dealing only with propositions, whereas language comprises questions, commands, wishes and exclamations as well, as noted already by Aristotle.

Individual instances of the frequent clashes between logic and language must be left for treatment to grammar-

[1]) There is no standard terminology among logicians, nor do they all agree as to the number of forms, but this does not matter for the purpose of our discussion.

ians. Their enumeration would exceed the limits of our argument.

Language may be used to mask a mind-content instead of revealing it. Yet much as it may be thus abused to serve dishonest purposes, it has laws of its own which even cheats and liars must obey. However remote from truth, their intentions are bound to be expressed in the true conventional terminology of the speaker's environment. If therefore a mind-content of the form *x is y* is desired to be foisted off upon the hearer as *x is not y*, the linguistic form for *x is not y* must be cognized before the deceit can be successfully carried out. If a fishhawker, for example, by manipulating his weights and scales, leads people to believe that they are getting four pounds of haddock when they are only getting three and a half, and makes them pay accordingly, he must know how to word his sentence to conceal his fraud.

Though lies of this kind originate in greed, i. e. in the emotional, their communication is a matter of cognition, inasmuch as the form *x is y* in any one of its grammatical and idiomatic varieties must be recalled into consciousness before the organs of speech can be made to despatch it to the hearer. This recall is antecedent to the cerebral stimulation of the vocal musculature, and the predicate conforms in each particular case to the varying quantities of fish disposed of, each new sale presenting an unknown *y* which must be found afresh by calculation.

Certain rules, then, have to be observed in "broadcasting" mental experiences. "By means of these rules *spiritual*, for example, can be turned into the adverb *spiritually*, or the abstract noun *spirituality*, and any unknown verb, heard for the first time, such as *ratiocinate*, is unhesitatingly made into *ratiocinated* in Preterite functions.

This simple and obvious process, which we all carry out in speaking our own or any other language, is known as Analogy, that is "similarity", "resemblance" [1]).

It is easy to see that analogical activity is of the intellective kind, inasmuch as each new formation implies comparison with some subconscious or conscious pattern, and the will cannot tell one pattern from another. The will, for example, cannot tell whether *do you* of *you do* is the right syntactic form in any given case. Neither can the will tell past time from present or future, or substances from their verbal or adjectival attributes, so that the differentiation of adjectives and adverbs, for example, if made, does not belong to its province.

The delay which is commonly felt in reducing the random elements of a new mind-content to the form of a familiar pattern was incidentally referred to in III, 18, 19, where two examples of retardation were recorded, experienced by a boy, the one in finding algebraic analogues, the other in constructing an unknown German paradigm on the pattern of a known one. The mastery of English *do*-forms by foreign learners supplies further evidence that analogy is far from being a spontaneous or non-thought process.

The retardation is easily accounted for. *Two analogical motor organizations can never be in consciousness at the same time.* One cannot have two muscular perceptions of a word at once, any more than two touches of the same key of a piano can be struck together. One may *see* two *to do's* on paper and visualize *them at one glance*, but they cannot be auditivized, nor activated in

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[1]) H. C. Wyld, Elementary Lessons in English Grammar, p. 166 ff.

their duality. In speaking as in hearing they are necessarily sequential. Hence the substitution of one auditory complex for another is first a question of recall, secondly one of imaginative activity in piecing together what has been recalled and what is new, and lastly it is a matter of judgement in finding whether a new complex *Do you take sugar?* for example, is relationally the same as *Do you take milk?* Now all this comes to determining whether a new complex is in keeping with its associates. That is to say, it is a kind of reasoning. Experience proves that even such simple substitutions as that of *sugar* for *milk* in the above two complexes will in the primary stages meet with considerable mental resistance, not because of the phonetic structure of the individual words themselves, but of the thought activity required for their organization into syntactic groups. Allowance must be made in the case of foreign learners, for the natural resistance occasioned by the habits of the mother tongue. But many of these are not difficult to overcome, for they can be got over by single acts of thought. If once the English pattern *Do you speak* has been mastered as a phonetic whole, the Dutch *Spreek je,* for example, can be associated to it by means of a single associative act. But when this stage, which is chiefly a question of association, has been got over, fresh analogical obstacles present themselves, which can only be solved by comparative and inferential acts of thought. For *Do you speak* is to *You speak,* as *Do he speaks* is to *He speaks,* and as *Do you spoke?* is to *You spoke.* Hence the futility of trusting to analogy alone in linguistic instruction. If the forms *I wait* and *I waited, Do I wait?* and *Did I wait?* have been mastered, there is a natural tendency to say *Do I waited?* on the analogy of *Do I wait?,* mistakes of this kind occurring every day.

After full deduction is made for alien influences, in the case of foreign learners, it will be seen that the difficulties to be overcome by English infants are essentially the same or even worse. For foreign learners mostly have the difficulties explained to them in systematic fashion, whereas English infant learners in the pre-school years, have them blowing about their ears indiscriminately and are left to their own resources to find their way in the labyrinth of syntactic difficulties.

29. The following tests will throw additional light on my position that every fresh mental combination meets with some resistance on its way to the outgoing nerves. After the English numerals had been thoroughly got by heart by the lower form, the multiplication-tables of six, seven, eight and nine were said in Dutch and English respectively, and the times of their production noted. The Dutch table of seven was said by the top boy in eighteen seconds, the English taking 40 seconds. The average rapidity attained by the class in repeating the Dutch table was seventeen seconds, the English table taking forty-three seconds.

The number 26.150.708, printed in Arabic characters and therefore presenting to Dutch and English boys the same optic mind-content, was pronounced by the top boy in six seconds, by the second boy in eleven, while a third, a very slow one, took sixteen seconds about it. No mistakes were made, by any of them. As the number of syllables if pronounced in full is nineteen, only the top boy can be said to have produced it with almost normal rapidity.

The slowest boy, by the way, delivered the same number in Dutch in six seconds.

30. The reduction of psycho-neuronic resistance through habit-formation will be sufficiently exemplified by the

fact that a certain Dutch sentence was at the first attempt translated into English in *nine* seconds without any mistake being made, and in *five* seconds at the sixth attempt.

The above results, like those mentioned in Chapter IV, are representative of a great number of tests taken during the 1929, 1930 and 1931 terms.

1. It is not difficult to see that analogy is a form of inductive reasoning. If a number of mind-contents of the type *Is x y?* for example are found to be expressed by the grammatical form *Do(es) + subject + verb,* the natural inference is that new mind-contents of the same type must be similarly expressed.

2. The host of English do-forms provides ample material for beginners in English to practise their comparative and selective sense. Yet, they constitute only a small percentage of the obstacles to be surmounted before full ability is reached in conveying thoughts and feelings from one person to another. Most of the above do-difficulties are of only one remove. That is to say they can be solved by single acts of thought. But when notions of tense, mood and aspect enter the mental process, difficulties multiply as fast as they do in algebraic equations. Indeed, looking at the vast number of syntactic and idiomatic forms that have to be analysed and re-synthesized by each speaker in the course of his mental development, it is not too much to say that the mastery of language is one of man's greatest intellectual achievements.

3. Thought of a different character, very closely allied to algebraic work, is met with in sentences containing what is called a provisional subject or object. "To see the townsfolk suffer so from vermin was a pity" is more commonly cast into the form "It was a pity to see the townsfolk suffer so from vermin", the introductory *it* summarizing

the whole of the subject-clause. The front-position of *it* reveals the fact that thought flashes all along the line of a mental sentence previous to its delivery, and that the order of delivery may be the reverse of the mental organization of the sentence. For the sensation of pity, though necessarily consequent upon the observation of the townsfolk suffering from vermin, and therefore last in the mental sequence, comes first in the order of delivery.

There is nothing incongruent in this, because, though certainly not moving with infinite rapidity as shown above, thought travels a great deal faster than speech, so that it can always keep a long way ahead, so much in fact that any new addition to the mental sentence can be arranged by means of the visual or auditory sense while the kinetic sense is delivering an existing complex.

34. When children are taught to spell, they are found capable as a rule of splitting up words at any stage of their development. Under the influence of parentheses or other causes adult sentences, as shown in Chapter III can be similarly interrupted. This proves that neither words nor sentences are ultimate integrities, hard and fast as billiard-balls, capable of being turned round and round without having their perceptual character materially altered. Nor are the motions of the two identical. A billiard-ball once started must run its course on the table. Its impetus is a punctual event. A sentence, however, after being started, can be checked anywhere in its career as soon as anything is found amiss with it. Its impetus is continuous. Such stoppings of the current of speech may be prompted by emotional agencies, as when a word, before being finished, is felt to be improper or rude, and the sense of impropriety acting as a negative stimulus upon the vocal organs, counteracts the positive stimulus

that started the word. Yet this very sense of impropriety is consequent upon the auditory perception of the word, while leaving the mouth, or before, hence consequent upon cognition.

The stopping of the progress of a word is obviously the result of intellectual comparison when *would* is substituted for *sh....*, the initial of *should*, or when *w....w* is muttered twice before *will* is finally produced; or when *mə* is brought out without a final consonant, and repeated in its unfinished state pending the decision whether the final consonant must be *l* or *s* (See above § 21).

35. The case for cognition negatively and positively, can be summarized as follows.

Negatively:

1. No language can be spoken until cognized.
2. Sentences are not ultimate units of sound.
3. Words are not ultimate units of sound.
4. No state of volition can be exteriorized [1]) unless associated to some objective conventional sound or group of sounds.
5. No association of sense and sound will satisfy the requirements of speech, unless the union between sense and motor perception is as firmly established as that between sense and sound perception.
6. Any sentence can be mentally "spoken" without the vocal muscles being moved.
7. Volition cannot tell one sound, or word, or syntactic combination from another.

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[1]) All conscious volitional acts have intellective motives. — See G. Heymans, Speciale Psychologie, I, p. 127.

8. The will can tell neither the beginning, nor the progress or the end of a word or sentence.
9. The will cannot be called into play for articulate speech until the sequence of sounds within the sentence is clearly outlined in the mind.

Positively:

10. There is differentiative activity in the perceptions of single auditory and kinetic impressions, such as *th* and *f*, *sh* and *s*, *i* and *u*, etc.
11. The association of auditory and kinetic perceptions is often a matter of great exercise.
12. There is analytic and synthetic activity in the imitation of unknown sound-complexes.
13. There is relational thought in the first conscious combination of sound and their sensory correlates, as when some object is said to be a *teacup*, or when the word *horse* is said to be *cheval* in French.
14. There is relational thought in the logical arrangement of the elements of a given state of consciousness, but also in the grammatical arrangement of its sound associates.
15. There is perceptual thought, antecedent to will-activity, in sentences of the type *My tea is too hot.*
16. There is spatial thought, antecedent to will-activity, in sentences of the type *Canterbury is in Kent.*
17. There is temporal thought in sentences of the type *His funeral is to-morrow,* or *Death was instantaneous.*
18. There is causal thought behind sentences of the type *He died of pneumonia.*
19. There is inductive thought behind sentences of the type *Brownness does not argue health.*
20. There is deductive thought behind sentences of the

type *No need to hurry* [1]), the conductor is still talking to the driver.

21. There is combinative thought, of a wide range sometimes, when judgements and questions are grouped together under the pronouns, *it, so, this, that* and others.
22. The difficulty of associating unknown foreign sound-complexes to familiar native ones proves that the process of "fusing" is not an involuntary one.
23. The fact that words sometimes appear to be beyond recall [2]), when their thing-associates stand out clear in consciousness, proves that "fusions" are not indissoluble combinations.
24. The clearest evidence of thought activity is seen in negative and modal sentences. The negative judgement mentioned above in 20 was generated by the positive observation of the conductor and the driver engaged in conversation.
25. Psycho-neuronic resistance is worn down by habit.

36. Practically speaking there is thought in the production of every fresh combination of a subject and a predicate, and as the state of consciousness is in perpetual change, *cliché* combinations and *cliché* sentences are comparatively scarce.

As, on the other hand, no completed thought can be spoken without audible sounds, and as no sound can be made unless there is a will to make it, the interdependence of cognition and volition in speech is absolute.

37. Reading aloud is physiologically the same as speaking

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[1]) Overheard from two gentlemen rushing to catch the last tram.
[2]) This may be owing to natural causes such as the decay of memory, brain fag etc., or to pathological causes such as aphasia.

aloud, and supplies the best clue, I believe, to the origin of the spoken sentence.

In reading the optic sense takes in such quantities of the printed material as consciousness can manage for translation into motor energy. These quantities are very small at first, not exceeding one or two symbols, but they grow rapidly with experience. The beginner finds even the smallest word a problem, each visible symbol being focussed for recognition apart from its neighbours, with whom there is no sensible connection. The union of the successive characters is a mental achievement. Even the transfer of two-symbol compounds, such as *am* or *be* into a coherent totality presents a difficulty, because of the "glide" between the two elements being a physiological process that differs from the sounds themselves, and differs with each new arrangement of two sounds.

38. The analytic and synthetic difficulties involved in the building up of words from visual data are observable with each class of beginners. Wundt says the sentence is partly an automatic process as soon as the first impulse is given for the first word to be freed from the mind-content.[2]) This may be true of adult speakers, but it must be borne in mind that in the initial stages there is an appreciable lapse of time between thought and speech, and even adult speakers are often found to hesitate. Six-years-old beginners may be weeks before reaching ability in connecting vowels and consonants together into words from visual printed characters. Babies take many months of experimenting before the principal elementary connections are successfully accomplished, and when all the elementary synthetic difficulties have been overcome, and in a more advanced stage a person

[1]) Compare § 29 above.

[2]) W. Wundt, Völkerpsychologie, II, p. 248.

comes to recognize four or five symbols together, seemingly united without any effort, the mental part in the process is still easy to trace. For it always takes some little time, however small a fraction of a second it may be, to run the eye along the file of symbols on the paper. Suppose the sentence to be *Marley was dead,* the eye reaches the *y* and probably the final *d* of *dead,* before the lips begin to move for the production of *m,* and while *Marley* is "on the tongue", the perception of *was dead* is already in the mind. So there is in each delivery a reversion from the last stage of the sensory process to the first. The visual stimuli are not immediately associated to their sound-equivalents, they are held for some time. But this holding proves that the will to speak is subservient to the consciousness of the relative positions of the visual symbols, that is, it involves cognitional activity in two respects. Not only the optic imagery itself, but also its logical organization must be remembered until the final sound of each successive "fill" of consciousness has been delivered. The process of perception of sound-groups and their analysis and synthesis is always ahead of the motor process.

9. The occurrence of metathesis in reading and speaking alike warrants the assumption that both processes run on similar lines. When the organization of the printed sequence *Marley* is not remembered properly, it is apt to be transformed into *Larmey.* Thus I remember hearing *Oaker-Quates* for *Quaker-Oats.* [1]) And the transposition of *face* and *lap* in *The girl buried her lap in the face of her mother* leaves no room for doubt but that the word *lap* was in the speaker's mind before the motor apparatus had completed the word *her.* Now the visualization of the girl and her face, the

[1]) Compare the other examples mentioned in § 21.

burying, the mother and the mother's lap can be completed within a very small fraction of a second; the logical connections of the items of the group would not take much longer with an adult speaker, the stimulation of the vocal muscles would take about 0.2 second, this being about the average time for visual stimuli to excite motor reactions.[1]) The delivery of the sentence in ordinary unimpassioned speech would take about three or four seconds. As the sentence contains 29 sound-symbols, the duration of each symbol averages about one tenth of a second, which is well within the limits of auditory perceptibility, this being about 1/100 second for vowels, and 4/100 for consonants. [2])

40. The perception of integrate words takes far less time to complete than the consecutive perceptions of their constituent sounds, [3]) at any rate for adult speakers, because associative activities tend to fashion each sound-complex into familiar words, thus making it all the more easy for central speech perception to keep ahead of speech movement. But they are apt to hinder speech production instead of helping it, as in the Mul-Musch confusion referred to in § 21 above.

41. The comparatively slow process of muscular movement added to the time requisite for muscular reactions to be

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[1]) W. James, Principles of Psychology, I, 85 ff.

[2]) Dr. G. Panconcellini-Calzia, Die Experimentelle Phonetik, p. 124.

[3]) From experiments made in the Groningen laboratory Prof. Brugmans found the average number of disconnected printed consonantal characters, discriminable in 1/25 second to be 4,2. With vowels in between, the number was about 10, and of significant words adult experimentees reached as many as 25 characters in one grasp.

Dr. H. J. F. W. Brugmans, Psychologische Methoden en Begrippen, 1st. ed., p. 254.

brought about, leaves ample time for the judgement to decide on the proper arrangement of the elements which are successively added to the mental chain by imaginative agencies or by inferential activity. It is hardly necessary to insist once more that the whole process of delivery is under the supervision of the intellect, the will being unable to tell the daughter from the mother, the action from the resulting state, or the right words from the wrong. If faulty associations cause a confusion of *məl* and *məs*, or other words, and a consequent interruption of the flow of speech, the will is negatively influenced by the intellect. The ear being only half a dozen inches from the mouth the auditory sense will report mistakes to the central clearing-office in the brain long before a sound is finished.

42. Both will and intellect may fail in the performance of their social duty. A person's knowledge of grammar may be inadequate to the needs of communication, as it was in the case of a six-year-old girl who said *Thirty years ago I am thirty-six*. A person's emotion may become too strong, for articulate sentences to be formed. The will is made impotent whenever from natural or pathological causes the memory is unable to supply material for speech.

43. The mnemonic, analytic and synthetic factors of word-formation reveal themselves in the faulty repetition by children of unfamiliar words, such as *abracadabra* or *hippopotamus* and other „tongue-twisters"; in the way familiar words are broken up by little youngsters when first attempting the art of writing in the junior classes of elementary schools; in the manner foreign words are sometimes brought forth piecemeal by boys and girls in secondary schools. One lad, to whom I dictated the word „squeak" for example, wrote it down upon the blackboard

with five pauses, each pause marking off a stage in the proceeding.

44. The influence of sub-conscious agencies is seen from the examples in 19 and 33 above, and in Introd. 28ff. Compare also the instances of mental reversion mentioned in III, 52, 53. Another very striking example is the common substitution by Dutch learners of subordinate clauses for English Accusative and Infinitive constructions, as in *He would that I should do it* for *He wanted me to do it*, the former being parallel to the Dutch *Hij wilde dat ik het zou doen*, except for the position of the objects *het* and *it*.

CHAPTER V.

SYLLOGISTIC ACTIVITY IN LANGUAGE.

1. There is no denying that in certain divisions of speech, especially in the province of humour and pathos, volition is apt to prevail over cognition.

All lyric utterances in prose and verse for example, are ultimately caused by stimulations of the passions, so much so that sometimes thought is made to stray from the beaten ways of logic into all sorts of fallacies and nonsense. Yet the intellect is never or rarely wholly in abeyance. In many cases the intellectual components of a mind-content, though subordinated to the volitional, will be found to be co-determinants of that very feeling which stirs the organs of speech into action.

In chapters IV and V it was demonstrated that the affections are not always the first causes in the production of simple sentences. In the present chapter we propose to show that syllogistic activity, i. e. the development of one judgement out of another, which is the most unmistakable proof of thought activity, and which for that very reason cannot be attributed to associative activity alone — is a very common element in continuous discourse, with syntactic forms of its own to mark the connections between the successive acts of thought. Sometimes there are no sensory links, the union of the various joints of thought being mentally inferred.

Let us first examine a few instances of infant speech.

2. If logic is to be taken *objectively* as *science of thought*

infant language is as innocent of syllogistic activity as other infant exercises are of natural philosophy. But if looked upon on the subjective side as one of the principles of mental activity distinguishable if not distinct from the volitional, there can be no doubt that syllogistic activity is to be observed about the infant as early as conscious will activity.

3. It is a well-known fact that long before articulate sounds develop, the infant knows how to take advantage of an indulgent mother. When given more than its due of attendance, it will soon make its mother a slave. The withdrawal of undue pleasures, such as the singing of lullabies and the cradle rockings so common in olden times, will call forth negative reactions of displeasure which, vociferated in the only way as yet available, are apt to be mistaken for symptoms of distress or physical trouble, and if sentimental mothers or nurses foolishly yield to these clamourings, the result is a cycle of coaxings on the mother's part and bawlings on her baby's, which does not end till the infant, presumably from exhaustion, falls off to sleep.

Now these vociferations are already premonitory symptoms of thought activity, for unlike the earlier cries, which have none but expressional signification, the latter reactions bear unmistakable traces of cognition, involving as they do, not only the expression of a subjective desire, but also an object towards which this desire is consciously extended. For where these indulgences are not practised i. e. where babies are not made acquainted with the pleasure of having lullabies sung to them and being rocked to sleep, they will go to sleep of their own accord, without any ado, which shows that, however indeterminate their form, the noises are really significant calls for the repetition

of sensations of pleasure, involving the elementary discrimination of the existence and non-existence of a sensation.

A more advanced stage of unspoken thought activity is that referred to in II, 30, 31, 32.

4. The following conversations are spoken instances of syllogistic activity.

a. Clare (aged 4) to her father:

"What big house is that!"
"A church"
"Who go to that church?"
"People, dear".
"Father and mother are people; father and mother go to that church."

b. Scene: the deck of a canal-steamer, carrying freight and passengers and half a dozen head of cattle. One of the passengers is Annie, aged 6, on the way to her grandmother's farm, where she is to spend Christmas.

Annie: "I wish all cows were dead, father."
"Dear, dear, how bad of you to wish that!"
"Well, they are nasty brutes!"

A few minutes after.

"No, father, I don't wish all cows were dead."
"Why not?"
"Well, grannie would have no milk; we get our milk from the milkman, but grannie can get hers only from her cows."

The syllogism contained in *a*, which is all but complete, as only the major premise is understood, is one of the A A A-type; the one concealed in the second passage

is of the E A E-type; for if the logical process is abstracted from the modal form of the statement, it will present the following figure:

Dead cows give no milk.
Grannie's cows are dead.
Grannie's cows give no milk.

c. Clara. showing a sheet of paper full of scrawls to her sister:
"You need not write Auntie a letter. I have written one."

d. Clara, showing her sister an empty tumbler:
"This is my tumbler. All the milk is out. You drank my milk."

c. and *d.* are instances of disjunctive syllogisms. The former of them can be expanded as follows:

Either you or I must write to auntie.
I have written to auntie;
You must not write to auntie.

The latter presents the following figure when expanded;

Either you or I emptied the tumbler.
I did not empty it;
You emptied it.

d. is based upon the general inference that if a tumbler is empty the milk must have been drunk by somebody. There is a fallacy both in the inference and in the final conclusion *You emptied it.* For if a tumbler is empty it does not follow that there should have been milk in it, and if it had been full previously, it does not follow that Clara's sister should have been the one to empty it.

The following two bits of conversation will do to show how common an event inferential activity is in ordinary adult conversation.

a. A gentleman on being shown out one evening and seeing the Great Bear in the starlit sky, said: "Ah, that is the Great Bear, and there is the Pole star! So your house faces north, same as ours."

b. "I don't like the look of the sky", a fisherman was heard to say, "shall be very much mistaken if we don't get a south-west wind and rain before the day is out."

In *a* the inferential *so* might be left out, in *b* the conditional *if* cannot be dispensed with.

5. Whatever there is of affectional activity in the above examples is excited by observation. Clara's statement about her father and mother going to a certain church is a purely logical one without any affectional leanings one way or another. So is the statement about the house facing north, which was inferred from the sight of the Pole star and Great Bear, though home associations apparently had some stimulating effect.

6. Inferential activity in fact, is scattered broadcast through every department of language.

"Wherever any one of the conjunctions *therefore, because, for, since, hence, inasmuch as, consequently* occurs, it is certain that an inference is being drawn." says Stanley Jevons. [1])

As shown above, thought is also an apparent formative in many complex sentences where no conjunctions are used. Yet will-activity, as noticed in IV, 36, is indispensable for their communication. For inferential truths by them-

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[1]) W. Stanley Jevons. Elementary Lessons in Logic, p. 153.

selves, like all other judgements, are of a static rather than of a dynamic character, since they can be held within the mind; but their communication to others depends upon the co-operation of the dynamic forces of the mind. It is the will that starts the latter, but the intellect determines the form of the successive articulatory movements.

7. The analysis of the mental processes underlying the following anecdotes will yield further evidence of thought being antecedent to speech activity.

"Young man", said an old lady to a tram-conductor, "if I put my foot on that rail, shall I receive an electric shock?"

"No, mam", he replied, "unless you place your other foot on the overhead wire."

The mental circumstance leading up to the lady's question is her doubt as to whether there is danger in putting one's foot on the rail. But there would be and could be no sense of doubt or fear if she had not had some knowledge or previous experience of the ways of electric currents and their danger to people's lives. There is some little deductive activity prompting fear or uncertainty. There can be no doubt that in chronological order her observation and deduction are antecedent to her fear. The young man's answer is a conditional negative *not unless you place your other foot on the overhead wire.* He seems to know more about electricity than she does. In order to produce an electric shock the circuit requires to be closed, which may be effected by connecting the overhead wire with the rail below. This is the general condition from which he deduces his statement "if you do not put your other foot on the wire while keeping one on the rail you will not feel a shock". His sense of humour prompts him to say "your other foot", the fun of the thing

being in the comical picture which a lady in such an attitude would present. A less humorous person than our tram-conductor might have said: "not as long as you don't touch the overhead wire." But there would have been nothing funny in that. It is the man's sense of humour then, which must be held to be the fundamental condition of his response, the potential energy which only required the fructifying touch of cognition to become kinetic energy of speech. The man's latent love of the comical and his perceptional powers are seen to be two of the components of the resultant motor activity. But there is another one, for the attitude suggested is a physical impossibility. The conductor's mental content therefore can only be completed by a union of two things which are not naturally combinable. As the humour of the situation depends entirely upon this incongruity, the keystone of the joke is an imaginative performance. Within the hearer the humorous sense is not kindled till the picture is complete. If the fancy link of the lady with her leg up in the air were missing, the joke would fall flat. The story must be heard out and the whole situation realized before the humour of it can be grasped.

As the chronological order of the events in the hearer's mind is the same as it was in the speaker's, the affection of the humorous sense is apparently caused by the combined action of the imaginative and the reasoning powers. As humorists are not made, any more than poets, but born that way, their joint powers are seen to yield to the predominant characteristic of their personality, unless the latter happens to be in a dormant state. On the lady's part the case is somewhat similar, her reason being the power which stimulates her fear, imagination having no share in the process. But on the conductor's side it is imagination

which enables him to override physical laws, reason arguing out the consequences of the situation created by the imaginative faculty, with the comical sense waiting to be tickled by their joint activity. The mind having thus been kindled by the three combined forces, the social motive finally turns its potential energy into kinetic energy of speech.

The extent to which thought is affected by the comico-imaginative components of the process is easily seen from the fallacy of the conditional argument which is concealed within the anecdote. The argument presents the following figure.

If you don't close the electric current you won't receive a shock.

If you don't put your other foot on the overhead wire while standing with one foot on the rail you don't close the electric current.

Hence you will receive no shock.

The fallacy is in restricting contact to the action of "your other foot" alone, when it may be made in many ways. The sentence-word *no*, and the conjunctions *if* and *unless* are easily seen to be predominant factors in the linguistic representation of the mental process.

8. Another instance of a man's humorous and imaginative disposition driving logic from the beaten path of the syllogism is the following anecdote, picked up in a third class railway compartment in Holland. "I wonder" said one passenger to another "what they are going to do about the water of the Zuyderzee when it comes to draining the little puddle?"

"Why, don't you know?" was the answer "They are going to bore a hole right through the earth and run the water off to the antipodes."

The questioner's conception of the situation is incomplete in one very important detail. The water is there and he is puzzled to know how they are going to get rid of it. "The little puddle", as a metaphor for the Zuyderzee, is an instance of litotes which shows that the speaker too is gifted with some sense of humour and imagination.

The combination of ideas in the answer affords fresh evidence that things not naturally associated or associable can be mentally combined to produce a comic effect. The boring of a hole in any vessel is sufficient to tap off the liquid in it. That's the general law underlying the notion of running the water off to the antipodes. The Zuyderzee is too big to be called a vessel in the ordinary sense. Imagination is however capable of reducing it to the dimensions of a wash basin. The antipodes are somewhere below the speaker, at the other end of the diameter of the earth. Bore a hole in the bottom of any vessel and "the other side" is reached. Bore and bore away in the bottom of the Zuyderzee and analogy points the way to reaching the antipodes.

The connection between the Zuyderzee and the antipodes is arrived at on deductive lines, the suggestion of boring a hole in its bottom as deep as the antipodes being a matter of analogy; the notion of running the water off is deductive too. Memory comes in for a modest share in so far as the recollection of where the antipodes are and how their relative situation is upon our globe is an indispensable condition for the whole of the picture to be completed.

All the forces of the mind are thus seen to collaborate in the construction of the joke. The order in which the two minds are filled with the respective visions of the Zuyderzee, the boring operations, and the running away of the water is the same. Neither party to the conversation

can enjoy the joke until the picture of the fictitious situation is complete. Should the hearer's powers of imagination be unable to grasp the whole situation the joke falls flat. There must be similarity in the mental dispositions of speaker and hearer for intercourse of this kind to be successfully carried on.

Nor is success ensured unless logical criticism is left aside. For there is an apparent fallacy in the inference. The syllogism that can be evolved from the second speaker's remark is of the A A A-figure. It may be constructed as follows:

A vessel loses its water if a hole is made in its bottom.

The Zuyderzee is a vessel.

The Zuyderzee loses its water if a hole is made in its bottom.

The fallacy is in the illicit use of the major term in the conclusion, because the water of the Zuyderzee, if our assumptions as to the operation of the law of gravitation are correct, could not be made to run beyond the centre of the earth.

Whether the plan is a feasible one is a matter that does not concern the logician any more than the humorist.

9. A Scotsman and an American were one day bragging together about the great men their countries had produced.

"None of your Scotsmen can touch Washington" said Sam. "The greatest man the world ever possessed. Fair and square. No lie ever crossed his lips!" "By Jove," replied Sandy "he must have spoken through the nose like all the rest of ye!"

Inferential activity is very much in evidence throughout the anecdote. The second statement explains the reason of the first, which is itself a conclusion based upon the general fact that no man, hence no Scotsman, can equal the greatest man the world ever possessed.

A vaguely causal relation is also felt between "Fair and square", and "No lie ever crossed his lips."

Sandy's annoyance is chiefly responsible for the gibe about Washington, as appears clearly from the exclamation which headed his retort to the American's bluff. But the reply itself, apart from its emotional introduction is an inference from the well-known tendency of many Americans to nasalize. Feeling gives the first impulse to the Scotsman's mental activity and the associations are not slow in coming, speaking through the nose being a natural associate to speaking through the mouth. But there is a good bit of logic too. "He must have spoken through the nose" expresses Sandy's conviction and he adds the reason for his belief. All Americans speak through the nose; Washington was an American, Washington spoke through the nose.

Implied in Sandy's answer is the assumption that Washington, being human, must have told lies like other human beings. The validity of the premise may be questioned but Sandy apparently had no doubt about it. The fallacy of the argument is in the assumption that all Americans without any exception speak through the nose, and secondly in the ambiguity of substituting speaking through the nose for speaking "across the lips", speaking through the nose being a popular name for nasalization. Hence there is not only a quantitative mistake about the middle term, the major term also is ambiguous.

In spite of the great prevalence of syllogistic activity, there are only two forms to show it, viz. the auxiliary *must* and the comparative conjunctive *like*. The other conclusions are inferred from the juxtaposition of the various statements without any introductory word to guide the hearer.

Psychic activity is also noticeable about the ellipses in *The greatest man . . . ., Fair and square,* the subject *he* being left to be inferred, and in (like) *all the rest of you,* in which the predicate *speak through the nose* is understood.

10. So far there has been no decided breach of logic even where the canons of the syllogism were more or less disregarded. The following tit-bit however, launched by the famous Dutch satirist Multatuli against the power of falsehood, expresses something that is in flat contradiction to the laws of thought.

A Damascus hawker, at the advice of a dervish, teaches a little bird to call out by way of advertisement, and to keep on repeating:

"Hassan's dates are three times bigger than they are! Hassan's dates are three times bigger than they are!" And so on, ad infinitum. The advertisement is a complete success. Hassan's dates seem to be getting bigger and bigger in people's eyes and find more and more willing purchasers.

As things cannot be both as they are and bigger than they are, the statement can have no foundation in the author's conviction as to the facts of the matter. Yet its logic is unchallengeable. All lies, repeated a sufficient number of times, are believed. The claim that Hassan's dates are three times bigger than they are is a lie. If the claim that Hassan's dates are three times bigger than they are is repeated a sufficient number of times it will be believed.

The syllogism involved in the story of Hassan the dervish and the bird [1]) is easily seen to be one of the A A A-figure, the statement itself being presumably an analogue

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[1]) Multatuli. Negende Geschiedenis van Gezag. Minnebrieven, p. 31.

to "Hassan's dates are three times bigger than they seem to be." The problem confronting the satirist was how to find a form for a mind-content which was not his own.

11. The use of fallacious reasoning is a very common device of humorists and satirists. [1])

Dickens's well-known thrust at Scrooge's avarice, contained in the statement: *Darkness is cheap, and Scrooge liked it,* is based upon the false connection of darkness and cheapness, two notions that are not mutually associable. All cheap things are liked by Scrooge, darkness is a cheap thing; darkness is liked by Scrooge.

This would be the complete syllogism, its fallacy being in the ambiguity of the middle term. Cheapness and darkness are only negatively associable in being both *not dear,* in the abstract logical sense that *not-dear-ness* extends to everything that is to be had for little or no money.

12. No humorist in English literature shows such strongly logical leanings as Jonathan Swift. Most of his productions run on quasi-logical lines, the smiles or the savage indig-

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[1]) Compare the following sentence, which also implies a breach of the laws of thought.

"If my father and mother had asked me whether I liked to be born, I should have made bold to decline." The conditional statement implies the assumption that the speaker was when he was not, inasmuch as his father and mother are supposed to speak to him before there was any question of his being born. Hence there is a breach of the Law of Contradiction. "Nothing can both be and not be". As an instance of misanthropic reasoning it will do well enough.

Compare also the following passage from "The Merchant of Venice."

"Look on beauty,

And you shall see *'t is purchased by the weight,*
Which therein works a miracle in nature.
Making them lightest that wear most of it."

Merchant of Venice, III, 2, 88—91.

nation he tries to transmit to his readers resulting chiefly from the impossible mental situations into which he leads them.

When about to ridicule the Moderns in the Moderns-versus-the-Ancients controversy, then raging in England, he starts the argument in "The Battle of the Books" by laying it down as a general truth that invasions always travel from north to south, so as to have a plausible starting-point for persuading the reader that literary depredations in the form of plagiarism had been committed by the Moderns of northern Europe upon the Ancients of the south. In satirising democracy he refers the reader to the republic of dogs, where everything is held in common, and even females are communal property.

In "The Tale of a Tub", by means of an argument which is logical and analogical all round, he makes tailors into gods, and declares people's souls to be in their clothes.

Gulliver's voyage to Lilliput is partly based upon the assumption of there being a tribe of men who do not exceed six inches in height; his voyage to Brobdingnag on the assumption that there are species of the human kind as tall as church-steeples. And both in Lilliput and Brobdingnag all things are in proportion.

In the famous Drapier's Letters he came near to causing a rebellion in Ireland by setting his plain straightforward wit to work to argue the Irish into the belief that they were going to be imposed upon by the ill-fated attempt of the London Government to circulate new halfpennies in Ireland. It was not by the blustering inflammatory speeches of the ordinary demagogue that Swift achieved the greatest of his political victories, but by the cool premeditated attempt of a man, who, understanding "every handle there is to the human soul" proceeds by

sheer force of reason to construct an argument which is as plausible as it is devoid of truth.

The halfpennies he pretends to be alarmed about, were perfectly sound in composition, as later investigations have proved beyond any doubt. But he says they were not, and from this false premise he starts to unfold to the Irish the evils that must befall them should they allow the governmental scheme to be carried out.

13. Thomas Moore is one of the greatest of English lyrical poets and "Tis the Last Rose of Summer" is one of his best-known lyrics. It is interesting to see how thought and feeling intermingle in almost every line of it. [1]) The poem is as follows:

'Tis the last rose of summer
  Left blooming alone;
All her lovely companions
  Are faded and gone;
No flower of her kindred,
  No rosebud is nigh,
To reflect back her blushes,
  To give sigh for sigh.

I'll not leave thee, thou lone one,
  To pine on the stem;
Since the lovely are sleeping,
  Go sleep thou with them.

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[1]) I want it to be understood that the following analysis of Moore's beautiful poem is not meant for use in the class-room. Analyses of this kind are like post-mortem exams, as Mr. Walter de la Mare once put it in the course of a lecture on poetry delivered to the Groningen branch of the English Association in Holland.

Thus kindly I scatter
  Thy leaves o'er the bed,
Where thy mates of the garden
  Lie scentless and dead.

So soon may I follow
  When friendships decay
And from Love's shining circle
  The gems drop away.
When true hearts lie withered
  And fond ones are flown,
Oh! who would inhabit
  This bleak world alone?

The very first two lines harbour two immediate inferences, the word *last* and *alone* implying a conscious contrast with the earlier state of the garden when there were more flowers. *Rose* and *blooming* are conscious perceptions which belong together, as do also *companions* and *faded*; but the term *companions* represents a relational element by the side of the idea of plurality; *lovely* is not an actual attribute of the *companions* but refers to their previous glory; *faded* and *gone* express their existing condition, the former attribute expressing a conclusion based upon the comparison of roses in full bloom with those in a dead or dying stage; the latter a metaphor, analogical to *gone* in *dead and gone.*

The last four lines of the first stanza are altogether of the logico-imaginative kind.

No flower is nigh expresses a negative spatial judgement, *nigh* having a ring of poetic feeling about it; *of her kindred* is a parallel to another link of imaginative thought, suggestive of a blood-relationship between the flowers; *to reflect back*

her blushes is rich in thought as well as in poetic imagination, the thinking part being expressed by the verb *to reflect*, which is suggestive of a going and returning of blushes from the rose to her companions as from one mirror to another; the imaginative part in *her blushes* which is probably an associative metaphor suggested by the colour of the rose. The last line is likewise a mixture of thought and imagination, *giving sigh for sigh* being suggestive both of a mutual relationship between the roses, and of the feeling of melancholy by which sighs are called forth. The words *left, to reflect* and *to give*, separated as they are from their subjects, reveal breaks in the psycho-physiological process of delivery.

14. The second stanza opens with the expression of a determination, followed by what sounds like a note of compassion, in *thou lone one* [1]), *I'll not leave thee to pine on the stem*, in which *I* and *thee* and *stem* represent the perceptual images, *will not leave* having volitional, and *lone* both affectional and numerical force. To *pine* is a metaphorical predicate expressing the fate that shall befall the rose if allowed to remain on its stem. It is this as yet imaginative state of decay which is the real excitant of the poet's compassion, and of his decision to save the rose from what he knows to be its inevitable fate. Hence the sentence as it stands is not a parallel to the original conception but to an ideo-volitional figure whose order is the reverse of that of the conceptional process.

The third and fourth lines show traces of deductive thought in the reason advanced for the poet's decision to let the rose go "to sleep" with her companions.

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[1]) Observe that *thou lone one* breaks the continuity of the combination and *pining*.

Thought has an affectional admixture, for the suggested reason is no logical conclusion. When stripped of its causal conjunction the statement will appear to admit of the following logical development, the second premise being suppressed.

The lovely are sleeping
You are a lovely
You shall be sleeping.

The *shall* of the conclusion introduces a term which is not a predicative of the subject *you* but indicative of the poet's mental attitude towards the combination *you* and *sleeping*.

Lines 5 and 6 describe how the poet's decision is carried into effect, and the nature of his action. There is just one interruption of the stream of perceptual imagery by the sentence-modifier *kindly*, which is really an affectional after-thought to *I scatter thy leaves o'er the bed*, though anterior to that thought in the sentence, its position being probably determined by metrical considerations.

Thy mates of the garden lie scentless and dead contains two perceptual predicates to *thy mates, of the garden* being an associative break of the straight line of thought *thy mates are scentless and dead*. It probably found its way into the sentence through the requirement of the metre.

15. *So soon may I follow when friendships decay* would seem to be one more instance of mental inversion, for the poet's wish to follow his friends, should death snatch them from him, must have been posterior to the idea of their decay, suggested to him by the decaying rosebuds around.

So soon marks the intensity of his desire and by its back-reference to the manner of the scattering of the leaves implies an element of thought as well.

The front-position of the adjunct *from Love's shining circle* in the following clause, is probably due to the influence of *friendships* in the preceding sentence, with which it is associated in meaning. *Love's shining circle* is probably an analogy to the "shining" corolla of the rose, the petals representing the gems. *Shining* is apparently a proleptic adjunct to *gems*.

16. The concluding lines of the poem are extremely complicated on the psychological side. They represent the conditions under which life, according to Moore, would cease to be worth living. The poetic element is unmistakably predominant, there being no fewer than seven metaphors among the ten significant words which the passage contains. Thought, nevertheless, is mingled with the affectional activity, for both *bleak* and *alone* are inferential terms, the former representing the result of the *withering* of *true hearts*, the *latter* of the *flying* of *fond ones*. In addition to its inferential character *bleak* bears analogous force. A world without true hearts would be like a garden devoid of flowers, the analogous feeling caused by the sight of such a garden and the idea of such a world being the connecting link.

Who would inhabit this bleak world alone is tantamount to saying *Nobody would like to live in such a dreary place, all by himself*. The whole sentence, when expanded, will be seen to contain two complete conditional arguments:

1. A world without friends is a bleak place to live in.
   When true hearts lie withered, the world is a world without friends.
   When true hearts lie withered, the world is a bleak place to live in.
2. A person all by himself would not like to inhabit such a world.

When fond ones are flown, a person is a person all by himself.
When fond ones are flown, a person would not like to inhabit such a world.

17. Much more passionate than "The Last Rose of Summer" is Gratiano's imprecation in the following passage of "The Merchant of Venice." [1])

"O, be thou damn'd, inexecrable dog!
And for thy life let justice be accused.
Thou almost makest me waver in my faith
To hold opinion with Pythagoras,
That souls of animals infuse themselves
Into the trunks of men."

In spite of passion taking up the greater part of Gratiano's consciousness, room is left for thought activity in almost every line. Inexecrable [2]) is explained by Aldis Wright to mean *that cannot be execrated enough.* Following as it does upon the term *damned,* it implies a reasoned element of thought, being equivalent to the causal clause *for you can never be execrated enough.*

And for thy life let justice be accused harbours another reason in the adjunct *for thy life,* which is equivalent to saying *because you live.* What follows next is probably an associative relation to the word *dog* in the first line, which is the only perceptible stimulant to *"souls of animals"* in the fifth.

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[1]) W. G. Clark and W. Aldis Wright. The Merchant of Venice. IV. Z, 127—132.

[2]) In later editions *inexorable* was substituted for *inexecrable,* but this does not affect our argument. See note to line 127.

CHAPTER VI.

THE INDIVIDUAL VERSUS SOCIETY

1. As regards the degree of accessibility of the infant mind to conventional influences, the following bits of speech from Clara and her friends are very instructive.
   1. Shall we buy a pencil at H's dad? They are very *dear* there (cheap).
   2. This one is *small* and that one is *big*. (Pointing at her shoes, 4. 5.).
   3. This is dad's big finger (taking hold of my little finger, 4. 5).
   4. When all have done birthday, then is my birthday (4.6.).
   5. When I get *into the bus* I'll wash my hands (out of the bus 4. 6.).
   6. I'm going *too far under* the bed (*under*, 4. 6.).
   7. My little *music* is broken (*mouth-accordeon*; 4.7.).
   8. Uncle George was here, he brought me *red currants with stones in them and little sticks to them* (*cherries* 4. 7.).
   9. How very typical: (4. 7.) (Said while looking at a picture. It was a literal imitation, borrowed from an older friend of hers.).
   10. When we go for a walk *we don't go through the* canal (*we won't go along* 4. 7.).

   Her knowledge of syntax may be gauged from the following bits;
   11. I must carry dad (2. 3.). Dad must carry I (2. 4.).
   12. Let's walk on this side, dad, (pointing over the way) not on that (pointing to where she was).

13. Which of these cigarette boxes do you like best? *The two of them* (4).
14. I won't eat my dinner, then I shan't be hungry by and by (4. 4.).
15. The whole world is full of *we* (people) 4.
16. Mammie has kissed *the two of us* (Mammie and I kissed each other 4).
17. I am the tallest and *so* is Mary (4. 1.).
18. If I play with Ida and if I don't play with Ida then, then Ida says how naughty! (If I refuse to play with Ida: 4. 6).
19. When I have a cold *I liked* lemon squash (4. 6.)
20. The next holiday *I've got* a tennisball from Uncle Harry.

Comment upon the Examples of Infant Speech.

2. Faulty co-ordinations of predication and predicative terms are shown in 4, 8, 10, 17; of space and spatial terms in 5, 6, 10, 12; of time and temporal terms in 19 and 20; of causality and causal terms in 14; of number and number-terms in 13 and 16; of person and person-terms in 11 and 15. The others are faulty only as regards the use of simple terms, their grammatical structure being right. Nos. 8 and 18 are remarkable for the self-activity they reveal. If it be realized that the infants from whose lips the above sentences were collected had had from two to four years of practice and instruction, the non-naturalness of speech-reproduction appears at once. For none of the above sentences could have been perceived in the same form by the auditory sense, and so they prove that mental abilities, other than the imitative instinct, are required for the acquisition of the art of speech by the indivi-

dual.[1]) The influence of society appears to be limited. It is absolutely limited by the individual's capacity for conformation to the "rules" of what is commonly called standard speech or language. Children are unable, adults may be both unable and unwilling to conform; poets frequently are obliged to scorn convention for the sake of rhyme and metre.

Examples of Uneducated Writings.

3. Millions of our uneducated fellow-mortals never reach a higher level of proficiency than is revealed in the following letters, written to a schoolmaster by mothers excusing their children for non-attendance.

a) Sir,

Will be so kind as to excuse my son . . from school as he is so ill I am going to take me to the Doctor to see him he has got such a cold and he cant arely speak your turly. Mrs. Blank.

(*b*) Sir,

Will you excuse . . for staying home this morning as I have the twins babys to look after and they are such a worrey to me I have put one out but I cant afford to pay for it so I have got him home. Mrs. Blank.

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[1]) "As a bright contrast to this 'constructive' method of procedure. we have the 'imitative' method, which may be so called partly because it is an imitation of the way in which a child learns his native language, partly because it depends upon that invaluable faculty, the natural imitative instincts of the pupil." — O. Jespersen, How to Teach a Foreign Language, p. 124.

[2]) I am reproducing the letters in the form I found them among the papers left by my late friend Mr. A. W. Richards, headmaster of Queenborough Council School.

(*c*) Sir,

I have never had anny of my children certificate when they have been bourned and I have got two more little boys to come to school I will try and get them tidy so as I can send them to-morrow I dont like the Idear of sending them as they are and my husban as been out of work so much latly that they have got all to peaces the Ollarday but this one name is . . bourned at . . 12 years old the first of last June. Mrs. Blank.

(*d*) Sir,

John ad a rush on his back through the Lice mixing up with the dirty people I let the rooms too

Your truley
Mrs. Blank.

Comment upon the Uneducated Writings.

4. The insertion of a few punctuation-marks would easily regularize the first and second papers. "I am going to take me to the Doctor to see him" evidently is meant to convey Mrs. Blank's intention to have the doctor in to see her son, although her grammar would suggest that *she* means to see the doctor; [1]) *cant arely* shows the well-known substitution of *cant* for *can* which is common enough in vulgar English, though generally condemned in standard speech; the transposition of *u* and *r* is *turly* is obviously the result of faulty vision.

As regards *form* there is little fault to find with (*b*), save for a couple of spelling-mistakes and the omission of punctuation-marks. *It*, in "I cant afford to pay for *it*", evidently refers to the putting out of the twins; *him* in

[1]) *to take me* is a provincialism for *to go*.

"so I have got *him* home", is rather too distant a back-reference to the son.

The third letter is constructively speaking the worst of the lot. The opening sentence would seem to refer to the birth-certificates of the children; *bourned* is a dialect form of *born*; *"so as* I can send" for *So that* is a common vulgarism; *idear* may be heard even from educated speakers in some connections.

They have got all to peaces conveys an obvious mental reversion to clothes that have never been mentioned, but whose presence in the mental process can be gathered from *tidy*; *the ollarday* is probably a corruption of *the other day.*

The last bit of writing is chiefly notable for its defective orthography. A comma after *lice* would partly remove the ugliness of the participial construction; *rush* would seem to be a misspelling of *rash.*

Pidgin English of Sailors.

5. If natives are apt to mutilate the King's English, much more so is of course the foreigner.

A Chinese boatswain, on being paid off at Batavia, was asked what he was going to do with all his money. He replied: "Me go back to Canton, me buy one more piecie wife."

An Italian sailor, who had been sailing under the Union Jack, off and on, for a goodly number of years, was heard to say one day: "Me no likee dee Englaishe breckefest, me no gitee dee macaroni".

Both utterances must have harmonized with their respective mind-contents and were brought forth at a "natural" rate of speech. From the individual, expressional

point of view they would fit many sentence-definitions as well as the loftiest effusions of Sir Walter Raleigh and other poet sailors. Only, they are not what is called Standard English. Society had never succeeded in bringing home to these speakers even the rudimentary distinction of *I* and *me*.

6. Mrs. Blank's gift of oratory may safely be taken to be at the same level as her literary talent. The dropping of her *h*'s and the other phonetic vulgarities in her letters betray a close connection between speech and writing. [1])

There are two conclusions which force themselves upon the reader. The first one is, that, far from speech being a natural correlate to thought, there may be a vast discrepancy between the completion of a mind-content or thought and its conventional expression. If measured by its own social standard, apart from the requirements of educated speech, the syntactic defects of the third letter exceed the limits of intelligibility. If each word of it, under the influence of the total mind-content, were a natural correlate to a piece of mental imagery, we should have to infer that in the mother's mind the boy had got "all to pieces".

In analysing the second letter, it must also be borne in mind that *I am going to take me to the doctor to see him*, if taken on its face value, is altogether out of joint with logic.

The second conclusion is that the mere reading or hearing of a language, the bare influence of the social factor by itself upon the individual, will never give a person the full command of language. There must be co-activity on the individual's part. There is a mental resistance to overcome between the passive sensation of speech and its

[1]) This, by the way, ought to give pause to opponents of spelling-reform.

active reproduction. The motor-apparatus, whether of the tongue or of the hand, requires training, and the training is in the first instance the business of the individual himself, whether assisted by teachers or not.

The writers of the above letters were regular readers of a local paper and of some London daily. They probably had had some thirty years of experience in hearing, or at any rate in reading "correct" English.

If people, thus circumstanced, produce such serious corruptions of the standard written dialect, the invalidity of any assumption that the written exteriorization of mental experience should be a "natural" process, following immediately upon the perception of a set of visual signs, [1]) would be open to everybody, and nobody is likely to deny the necessity of systematic training. Yet writing is not a more complicated set of spatial "gestures" than speaking. Speech movements are more easily naturalized or habitized than manual movements, it is true. But this is only because the habitization of lingual movements begins much sooner, and is facilitated by the fact that the tongue is a much more active member than the hands, and consequently in a better condition for collecting experience. It is even true that habitization may result in combinations that

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[1]) The state of things in Holland is no better than in England. An old gentleman of my acquaintance, in signing an I. O. U. some years ago, spelled the formula *Goed voor driehonderd gulden* as *Goet foor driehondert gulden*. His spelling was faultless from the phonetic point of view, spoken Dutch having no final d's, and showing assimilation of *v* to *f* in the combination *Goed voor*.

The gentleman in question had been a faithful reader of two Groningen dailies for more than forty years.

Quite recently I was shown a letter written by a servant-girl in an Amsterdam hospital, which was styled almost throughout after the pattern of interrogative sentences. Judging from that girl's sentences her mind might be inferred to be one great interrogation-mark.

are seemingly immediate correlations of sounds and their mental images, but there is always a long chain of conscious attempts at the bottom of the motor process, in speech as well as in writing. These conscious attempts may be forgotten in later life, they are very important factors in the development of speech.

As regards the pedagogic aspect of the matter nobody is likely to challenge the assertion that a cure of Mrs. Blank's defects of speech and writing can only be effected by conscious effort.

CHAPTER VII.

CONCLUSION.

1. The above examples warrant the assumption that the cognitional and the volitional are inextricably bound up in speech. Purely cognitive mathematical or scientific truths require volitional motives to convey them to whatever ears they are intended for. On the other hand *all volitional utterances expressed by means of words, require not only that these words should be within recall, but also that they should be distinguished from those to which they are related in form or meaning,* that is to say *as long as there is room in consciousness for verbal perceptions, speech never is wholly volitional in character.* When the mind is filled with affectional elements only, to the utter exclusion of all cognitional perceptions, there can be no question of speech, properly speaking. There may be cries, or tears, or punches or blows, or shouts or the tearing of hair or whatever expressional gestures man may have recourse to, but there can be no coherent speech.

2. Not only are volitional and cognitional elements indissolubly bound up in speech, but there is unmistakable evidence that all verbal utterance, however complex in form, proceeds from simple mental impulses.

It was shown above that articulate sounds are produced by the joint activity of different muscles. Being a synchronous process, this muscular co-operation must be due to synchronous excitations of the nerves that govern the movements of the voice apparatus. And as these nerves have

their central terminals in the brain, it follows that whatever the character of brain-stimulation may be it must be a process, which affects all the vocal nerves simultaneously.

3. As shown in Chapter II, such one-word sentences as *Stop!* are expressive of both cognitional and volitional elements. Their volitional character is associated chiefly with the peculiar action of the laryngeal musculature which marks them as imperatives; their logical aspect depends chiefly upon the actions and reactions of the superglottal musculature from which spoken words derive their shape, with all the muscles of the respiratory apparatus in attendance. Again the nerves that govern the laryngeal musculature are seen to be excited simultaneously with those that govern the movements of the tongue, the lips and the uvula.

4. The same applies to sentences consisting of two or more words. Their greatly varying contents are reduced to unity previous to being delivered. Whether they refer to what is mentally conceived as fact or as non-fact, there is a mental process to fuse their cognitional and volitional elements together. It is probably the same unconscious kind of flash as that which produces our associations, and that which enables us to mark twelve units off as a dozen, twenty units as a score, or to denote such very complex sets of phenomena as a shipwreck or a war by simple terms. It may be likened to the flash (electric or otherwise) which is required to fuse hydrogen and oxygen, when put together in due combinable quantities, into water. Whatever may be the mental process that provokes speech activity, the expression of volitional can be made to synchronize with the expression of cognitional elements.

5. As neither thought nor volition can be transmitted by means of speech-sounds, unless these sounds are known

to the speaker and the person spoken to, one must assume that previous to speech-formation, rapid as the process may be, there is that distinction of the forms of words and sentences which renders them fit, or which is thought to render them fit, for communicating the infinitely variable forms of mental contents from one person to another. As the distinction of words depends upon the distinction of individual sounds, and the distinction of sentences upon the distinction of words in their form and order, speech, if it is to function properly, is seen to be conditioned by the distinction of sound. All conscious articulate speech is guided by the intellect.

6. There is the vast mass of experience of foreign language instructors to support this assumption. No alien sounds can be properly reproduced until their auditory and motor characteristics have been properly perceived. It takes the average Dutch scholar many months of training to master the pronunciation of isolated *th's*, it may take twelve months or more to master such combinations as *s* + *th*, *th* + *s*, *sh* + *th*, etc. Many never succeed in hitting off the right lengths of the vowels in such words as *bat* and *bad*, *bet* and *bed*, and the quality of the final consonants of *cab*, *bag*, *cap*, *back* etc. One lady-pupil of the writer's took more than twelve months of assiduous practice to master the dull sound of the English l *in cold*, *field*, etc. her natural *l* being combined with the position of the Dutch vowel heard in *duur*, similar to the vowel in the German *Tür* or the French *lune*. A nine months' stay in England had never made her conscious of the peculiar way she pronounced such words as *bold*, *cold*, *pull*, *pulled*, etc. Even when aware of what from the English point of view is a defect, she had great trouble in getting her voice muscles to conform to the dictates of her conscious

self. The reason why some pupils succeed almost at once, without any visible effort, where others take many months of training, is a matter of personal aptitude and very likely one of heredity.[1]) Subconscious agencies may also be at work. Some Dutch children will pronounce *th's* quite easily when in their prattling stage, and afterwards lose the formation of them altogether.

7. All these articulatory exercises of adult pupils are in a way repetitions of infant practice. They are rendered more difficult, it is true, by the associative influence of those vernacular sounds, which are more or less similar to the foreign ones. But they are like infant experience in one very important respect, i. e. *the sounds must be distinguished on their acoustic and organic sides before one can hope for a successful reproduction.*

8. Sound-combinations have to be distinguished in the same way as single sounds. In *kun je,* one of the Dutch equivalents of *can you* the *n* and the *j* have coalesced into one nasal consonant, similar to *gn* in the French *campagne* and *agneau.* It is a pretty common occurrence at public examinations for candidates to know the rule without being able to reproduce *can you* in its English form.

9. Words have to be distinguished, not only in their isolated forms but also in connected speech. The commonest instance in Dutch schools is the pronunciation of the English definite article before vowels. The ordinary *the* before consonants, once the lip-teeth character of *th* has come to be distinguished is easy enough. But *the* before a vowel, with its i-sound, cannot be mastered unless it

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[1]) The association of auditory impressions to motor responses is sometimes amazing. In the Groningen school for backward children there was a girl of very feeble intelligence, who would play any tune on the piano after hearing it two or three times.

is completely divorced from the associative influence of the Dutch article *de*, the vowel of which is the same before consonants and vowels.

10. The mispronunciation of the article is not likely to affect the meaning of the word to which it belongs. But such words as *dead* and *death, heat* and *heath, invidious* and *insidious, derisive* and *decisive, dusky* and *dusty* and many others require to be perfectly discriminated against the levelling tendencies of their strongly associated forms, if they are to function properly in speech.

11. Sentences too, have to be distinguished as regards their form if they are to function properly. Statements, questions, commands and exclamations have each of them their own peculiar sound-arrangement with their own mental associations. Such sound-couplets as *The superintendent had a cage constructed* and *The superintendent had constructed a cage* differ so widely in symbolic value that their proper discrimination becomes a matter of absolute necessity.

Consider the manifold diversity of forms in *You like cocoa. Do you like cocoa? You don't like cocoa. You do like cocoa. You don't like cocoa? You don't like cocoa, do you?. You like cocoa, don't you? You never liked cocoa,* — all of them having the same perceptual elements, but widely different mental associations, which have to be mastered somehow or other, before a person, whether native or foreign, can claim to speak the King's English.

12. The physical aspect of speech was found to consist of bunches of sound, varied *ad infinitum* to suit the infinite requirements of human intercourse. As each bunch is mentally a unit, specifically and generically distinct from others, sentences ultimately fall under the general category of ideas, all simple sounds and all their combinations into words and sentences ultimately assuming the character

of class-nouns having certain functional attributes in common.

13. Those disorders of speech which are symptomatic of brain-lesions show that the combination of simple sounds into words and of words into sentences is not conditioned by the existence of sensory images only. There is some unconscious binding matter, some force that holds them together. Lesions of the brain are characterized by all sorts of irregularities in word-formation and sentence-formation, and the associations of things and sounds appear to be divorcible. Sometimes the visual image of a thing is recognized, when its auditory associate is lost. Sometimes the patient breaks down in grammatical construction. Some patients will rattle out words that make no sense, others seem to understand words but lose the control of their motor apparatus. It follows that each normal sentence is a successful reproduction of the first correct associations laid between the mental images of sound-organizations on one hand and their correlated thing-images. If sentence-formation proceeds so rapidly as to resemble reflex reactions, it is because habit has reduced neural resistance to the smallest possible minimum.

Glottal sounds can be made spontaneously, the power to produce them being a matter of heredity. But articulate sounds must be cognized again, whenever they are to be used for social purposes. So must sound combinations. So must words and sentences. While there is no cognition, as in the pre-word stage of the infant, or in the initial stage of the learner of a foreign language — or no recognition through brain-lesions or otherwise, no speech can be made. The corrections made in the course of speaking or writing show the intellect to be constantly

on the alert while the sentence is being delivered. The facts of methathesis, prolepsis, and other misplacements prove that cognition precedes the delivery of words. And when speaking or singing slowly one can mentally see or hear each syllable in the conscious field before sound is given to it.

All this leaves no room for doubt but what there is of volition in the production of the sentence is conditioned by the cognitional, as much as by the social and other affectual incentives which provoke speech-activities. The point of application of the volitional forces that start the vocal musculature is always found to be a perceptual given, and no method of instruction which disregards this primordial fact can hope to be successful.

THE END.

INDEX.

The Roman numbers refer to the chapters, the ordinary ones to the sections.

BIBLIOGRAPHY.

THEORY OF KNOWLEDGE.

John Dewey, How we Think, London, 1910.
T. Fowler, Logic Deductive and Inductive, Oxford, 1909.
G. Heymans, Die Gesetze und Elemente des Wissenschaftlichen Denkens, Leipzig, 1923.
S. Jevons, Elementary Lessons in Logic, London, 1925.
C. K. Ogden and I. A. Richards, The Meaning of Meaning, London, 1930.
Leo Polak, Kennisleer contra Materie-Realisme, Amsterdam, 1912.
W. T. Stace, Theory of Knowledge and Existence, Oxford, 1932.

GENERAL PSYCHOLOGY.

H. Bavinck, Beginselen der Psychologie, Kampen, 1923.
J. H. Bavinck, Inleiding tot de Zielkunde, Kampen, 1935.
H. J. F. W. Brugmans, Het Psychisch Onbewuste, Groningen, 1928.
———, Psychologische Methoden en Begrippen, Haarlem, 1922.
Kuno Fischer, Das Verhältnis zwischen Willen und Verstand im Menschen, Heidelberg, 1898.
G. Heymans, Inleiding tot de Speciale Psychologie, Haarlem, 1929.
W. James, Principles of Psychology, I en II, London, 1890.
E. Meumann, Intelligenz und Wille, Leipzig, 1908.
J. S. Moore, The Foundations of Psychology, Princeton, 1933.
J. B. Watson, Behaviorism, London, 1931.
W. Wundt, Grundries der Psychologie, 15th ed., Leipzig 1922.

PSYCHOLOGY OF LANGUAGE.

Charles Bally, Le Langage et la Vie, Paris, 1926.
Karl Bühler, Sprachtheorie, Jena, 1934.
Ernst Cassirer, Philosophie der Symbolischen, I, Berlin, 1923.
Henri Delacroir, Le Langage et la Pensée, Paris, 1930.
M. Delbrück, Grundfragen der Sprachforschung, Strasbourg, 1901.
A. Descoeudre, Le Développement de l'Enfant de Deux à Sept Ans, Paris, 2nd ed.
Karl Otto Erdmann, Die Bedeutung des Wortes, Leipzig, 1922.
E. Fröschels, Psychologie der Sprache, Leipzig und Wien, 1925.
A. Gardiner, The Theory of Speech and Language, Oxford, 1932.
I. A. Gheorgov, Ein Beitrag zur Grammatischen Entwicklunge der Kindersprache, Leipzig, 1908.

A. Giesswein, Die Hauptprobleme der Sprachwissenschaft, Freiburg, 1892.
J. van Ginneken, S. J., Gelaat, Gebaar en Klankexpressie, Leiden, 1919.
———, De Roman van een Kleuter, 's Hertogenbosch, 1922.
———, Principes de Linguistique Psychologique, Amsterdam, 1907.
E. B. Huey, The Psychology and Pedagogy of Reading, New York, 1928.
O. Jespersen, Language, its Nature, Development and Origin, London, 1928.
———, The Philosophy of Grammar, London, 1924.
E. Meumann, Die Entstehung der ersten Wortbedeutungen beim Kinde, Leipzig, 1908.
F. Paulhan, La Double Fonction du Langage, Paris, 1929.
W. Pillsbury and C. L. Meader, The Psychology of Language, New York, 1928.
H. J. Pos, Inleiding tot de Taalwetenschap, Haarlem, 1926.
———, Zur Logik der Sprachwissenschaft, Heidelberg, 1922.
E. Sapir, Language, New York, 1921.
F. de Saussure, Cours de Linguistique, Générale, Paris, 1931.
Clara und William Stern, Die Kindersprache, Leipzig, 1928.
J. Vendryes, Le Langage, Paris, 1921.
K. Vossler, Positivismus und Idealismus in der Sprachwissenschaft, Heidelberg, 1904.
W. Wundt, Die Sprache, I, II, 3rd ed., Leipzig, 1911.
Heinz Werner, Grundfragen der Sprachphysiognomik, Leipzig, 1932.

EDUCATIONAL.

A. Hamaïde, La Méthode Decroly, Paris, 1932.
O. Jespersen, How to Teach a Foreign Language, London, 1923.
D. Kennedy-Fraser, Education of the Backward Child, London, 1932.
———, The Psychology of Education, London, 1929.
A. Nanninga-Boon, Psychologische Ontwikkelingsmethoden van het Doofstomme Kind, Groningen, 1929.
———, Het Denken van het Doofstomme Kind, Groningen, 1934.
H. E. Palmer, The Oral Method of Teaching Languages, Cambridge, 1923.
S. H. Rowe, Habit-formation and the Science of Teaching, New York, 1916.
Mary E. Thompson, Psychology and Pedagogy of Writing. Baltimore, 1925.

STELLINGEN.

I.

De behavioristische theorie is gevaarlijk voor het taalonderwijs.

II.

Heinz Werner's Sprachphysiognomik is niet in overeenstemming met de taalfeiten.

III.

„Accent und Bedeutung sind verschiedene Worte für eine und dieselbe Sache". — Deze uitspraak van Vossler is onjuist.

Vossler, Positivismus und Idealismus in der Sprachwissenschaft, p. 65.

IV.

Men kan geen voegwoorden aanvoelen, zoals James en Van Ginneken beweren.

W. James, Principles of Psychology, I p. 245—46.
J. van Ginneken, Principes de Linguistique psychologique, § 165.

V.

Van Ginneken's verklaring van ontkenningen is onvolledig.

Principes de L. p., § 227—§ 239.

VI.

De door Kruisinga gemaakte onderscheiding tussen „checked" en „free" vowels, is onlogisch.

E. Kruisinga, An Introduction to the Study of English Sounds, § 57.

VII.

"The ing can form groups that do not allow of a logical analysis but must be treated as syntactically one". — Deze uitspraak van Dr. Kruisinga is onjuist.

E. Kruisinga, A Shorter Accidence and Syntax I, 5th ed., § 271.

VIII.

Kruisinga's bewering over de identiteit van onderwerp en gezegde in § 269 b, van "A Shorter Accidence and Syntax" I, 5th ed., is onjuist.

IX.

Het gezag is een onmisbaar element bij alle werkzaamheden welke door twee of meer personen gezamenlijk moeten worden verricht.

X.

Burke's beschouwingen over de waarde van gezag en vrijheid hebben nog hun volle betekenis.

Burke's Reflections on the French Revolution, by F. G. Selby, p. 8.

XI.

De juistheid van Burke's beschouwingen over de verhouding van principes en practijk blijkt o. a. uit de jongste ontwikkeling van het politieke leven in Nederland.

Burke's Reflections, p. 66 ff.

XII.

Fonetisch schrift is van weinig waarde voor de practijk van het onderwijs in de moderne talen, tenzij aangevuld door mondelinge oefeningen.

XIII.

De globalisatie-methode is wel bruikbaar voor het aanleren van de uitspraak, maar niet voor de syntactische en idiomatische vorming van de leerlingen.

XIV.

Het zelfwerkzaamheidsbeginsel is bij het literatuuronderwijs voor toepassing vatbaar.

XV.

De gewoonten van de moedertaal vormen een der grootste geestelijke weerstanden welke men bij het vreemde taalonderwijs op onze middelbare scholen te overwinnen heeft.

XVI.

Het gelijktijdige aanleren van drie of meer vreemde talen geeft aanleiding tot allerlei associatieve stoornissen.

XVII.

Aan de door Jespersen gestelde voorwaarde voor het leren spreken van een vreemde taal, dat men het taalgevoel „ample opportunity for coming into play" moet geven, kan bij ons heersende systeem niet worden voldaan.

Jespersen, How to Teach a Foreign Language, p. 124.

XVIII.

"Ear-training exercises cannot be carried out without the use of phonetic symbols". — Deze bewering van Palmer is onjuist.

H. E. Palmer, The Oral Method of Teaching Languages, 3rd ed., p. 33.

XIX.

Professor Kohnstamm's opmerkingen over wat de gezagvoerders van de Vlissingse mailboten paraat dienen te kennen zijn onjuist.

Dr. Ph. Kohnstamm, Parate Kennis, p. 10; J. B. Wolters 1925.

XX.

Enige kennis van de beginselen der kennistheorie en der zielkunde is wenselijk voor den leraar.