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chapter 7

Humans without Symbols: Restricted Communication

In preceding chapters we have stressed that without language could not be the complex beings we are. The question that then arises What if we did not have language, and what if we could not produce respond to symbols? There is no way of answering the question direc as all societies and groups have always had systems of language and course, even children, whether deaf or retarded, become thoroug human when they learn to communicate symbolically. No adult, once or she has learned a language, can be deprived of this knowledge; he there is no way, even if we wished to, to produce human beings with a language in order to see how they would act.

Although it is not possible to rear infants experimentally i speechless environment or to destroy the language functions of ad deliberately, there have been certain unplanned occurrences that h produced conditions very roughly equivalent to those that would required for such experiments. (Furthermore, as we shall show Chapters 9, 10, and 11, it is possible to study the effects of langu acquisition on the behavior of young children.) In this chapter we sl review several of these "natural experiments" for the light they sh however indirectly, on what happens when language functions are mi ing or impaired. We shall consider such exceptional individuals as

mentally retarded, children reared in almost complete isolation, persons who are deaf and blind, and sufferers from two types of mental impairment, aphasia and schizophrenia. These are very different kinds of unusual human beings, but they all have one handicap in common that matters to us here; their language functioning is minimal or much impaired. Schizophrenic patients are marked by a regression in their use of normal modes of communication. Aphasics are characterized by the loss or disturbance of language responses. Some subnormal persons have never learned to speak, write, or otherwise communicate with facility. Children reared by human beings in isolation from society are rare, but a remarkable case has been studied. Finally, the condition of the deaf and blind is especially relevant to our inquiry, as is illustrated by Helen Keller's classic account of how she learned language. Each of these unfortunate natural occurrences illuminates a different aspect of the relation of language to behavior. Together they provide strong evidence of the importance of language by showing what happens to persons who lack language, to those who lose it, or those whose language ability is seriously impaired. These "natural experiments" will reveal how basic language is to the emergence and structure of the self.

Isolated Children

THE CASE OF ISABELLE

A significant case that illustrates the importance of language in the shaping of human behavior was reported by K. Davis. (8:432–37) A girl named Isabelle, an illegitimate child, had lived virtually alone with her deaf-mute mother in a single room until she was about six and one half years old. Her behavior was described as being almost "that of a wild animal, manifesting much fear and hostility. In lieu of speech she made only a strange croaking sound. In many ways she acted like an infant." It was said by a psychologist who examined her that "she was apparently utterly unaware of relationships of any kind." At first it was hard to know whether she was able to hear or not, because she was so unresponsive to sound. When tests established that she was not deaf, specialists working with her were inclined to believe that she was feebleminded and "wholly uneducable," and that it would be futile to attempt to teach her to speak. Her score on tests, even nonverbal ones, was exceedingly low. A Stanford-Binet test gave her a mental age of nineteen months, although her chronological age was more than four times greater, placing her in the low-grade feebleminded category.

In spite of pessimism regarding the outcome, Isabelle was subjected to systematic training. It was a week before she made her first attempt at vocalization, but in two months she was beginning to put sentences together. Nine months later she could write well, retell a story after hearing it, and recognize words and sentences on the printed page. Seven months later she possessed a vocabulary of between fifteen hundred and two thousand words. She had covered in two years the stages of learning that usually require six, and her IQ had tripled. When Davis reported on her she was fourteen years old, had passed the sixth grade in public school, and behaved like a normal child.

It is instructive to note that this child was not actually reared in isolation, but had the constant companionship of her deaf-mute mother who took care of her and from whom she learned gestures. As later events demonstrated that Isabelle was not mentally defective, it is probable that articulated, verbal speech was the crucial environmental factor that had been absent. It is virtually certain that if her mother had not been a deaf-mute, Isabelle's retardation would have been relatively slight and would not have attracted any special attention.

The alternative explanation is that her retardation was due merely to lack of stimulation of a nonverbal sort—that is, from lack of a multiplicity of "contacts"; however, this seems rather improbable. Observers sometimes have stressed the importance of the presence of other people in one's early social environment, without specifically recognizing that the presence of others is not in itself the crucial factor for the development of complex mental functioning. The person who grows up experiencing extremely restricted contacts with other persons need not be greatly retarded if the few persons with whom he or she does have contact are intelligent and articulate. On the other hand, deaf children, if given no special training, will be seriously retarded no matter how many adults surround them. Lack of opportunity to learn language behavior is the key to retarded mental development.

The Blind Deaf

Persons who are deaf, or deaf and blind, must have special training if they are to learn a language. Invaluable in this connection is the report by the noted blind and deaf woman, Helen Keller, who began to learn American Sign Language at the age of seven. The following is her own story, somewhat abridged, of her discovery of language (16:22–24):

> The most important day I remember in all my life is the one on which my teacher, Anne Mansfield Sullivan, came to me. I am filled with wonder when I consider the immeasurable contrast between the two lives which it connects. It was the third of March, 1887, three months before I was seven years old.
>
> The morning after my teacher came she led me into her room and gave me a doll. The little blind children at the Perkins Institution had sent it and Laura Bridgman had dressed it; but I did not know this until afterward. When I had played with it a little while Miss Sullivan slowly spelled into my hand the word "d-o-l-l." I was at once interested in this finger play and

Helen Keller with her teacher Anne Sullivan. In her autobiography Miss Keller describes the intellectual, emotional, and conceptual changes in her life as a result of language acquisition. *(Wide World Photos)*

tried to imitate it. When I finally succeeded in making the letters correctly I was flushed with childish pleasure and pride. Running downstairs to my mother I held up my hand and made the letters for doll. I did not know that I was spelling a word or even that words existed; I was simply making my fingers go in monkey-like imitation. In the days that followed I learned to spell in this uncomprehending way a great many words, among them *pin, hat, cup,* and a few verbs like *sit, stand,* and *walk.* But my teacher had been with me several weeks before I understood that everything has a name.

One day, while I was playing with my new doll, Miss Sullivan put my big rag doll into my lap also, spelled "d-o-l-l" and tried to make me understand that "d-o-l-l" applied to both. Earlier in the day we had had a tussle over the word "m-u-g" and "w-a-t-e-r." Miss Sullivan had tried to impress it upon me that "m-u-g" is *mug* and that "w-a-t-e-r" is *water,* but I persisted in confounding the two. In despair she had dropped the subject for the time, only to renew it at the first opportunity. I became impatient with her repeated attempts and, seizing the new doll, I dashed it upon the floor. I was keenly delighted when I felt the fragments of the broken doll at my feet. Neither sorrow nor regret followed my passionate outburst. I had not loved the doll. In the still, dark world in which I lived there was no strong sentiment or tenderness. I felt my teacher sweep the fragments to one side of the hearth, and I had a sense of satisfaction that the cause of my discomfort was removed. She brought me my hat, and I knew I was going out into the warm sunshine. This thought, if a wordless sensation may be called a thought, made me hop and skip with pleasure.

We walked down the path to the well-house, attracted by the fragrance of the honeysuckle with which it was covered. Some one was drawing water and my teacher placed my hand under the spout. As the cool stream

gushed over one hand she spelled into the other word *water,* first slowly, then rapidly. I stood still, my whole attention fixed upon the motions of her fingers. Suddenly I felt a misty consciousness as of something forgotten—a thrill of returning thought; and somehow the mystery of language was revealed to me. I knew then that "w-a-t-e-r" meant the wonderful cool something that was flowing over my hand. That living word awakened my soul, gave it light, hope, joy, set it free! There were barriers still, it is true, but barriers that could in time be swept away.

I left the well-house eager to learn. Everything had a name, and each name gave birth to a new thought. As we returned to the house every object I touched seemed to quiver with life. That was because I saw everything with a strange, new sight that had come to me. On entering the door I remembered the doll I had broken. I felt my way to the hearth and picked up the pieces. I tried vainly to put them together. Then my eyes filled with tears; for I realized what I had done, and for the first time I felt repentance and sorrow.

I learned a great many new words that day. I do not remember what they all were; but I do know that *mother, father, sister, teacher,* were among them—words that were to make the world blossom for me, "like Aaron's rod, with flowers." It would have been difficult to find a happier child than I was as I lay in my crib at the close of that eventful day and lived over the joys it had brought me, and for the first time longed for a new day to come.

It is extremely significant that Miss Keller describes the changes that language brought in her life as both an intellectual and emotional revolution. Not only did the acquisition of words give her an intellectual grasp of the world, but it also altered her attitudes toward things and people and toward herself. Indeed, her temperament appears to have been changed. Her memory of her first seven years was vague, and she even hesitates to apply the term "idea" or "thought" to her mental processes during that time. The transformation was, in short, not merely a superficial one attendant upon the acquisition of an additional motor skill; it was a fundamental and pervasive change that altered, and indeed revolutionized, her total personality and image of herself.

It is interesting to note that controversy developed over the question of whether Helen Keller had a right to, or could intelligently use, words of sight and sound. As she was both deaf and blind, how could she talk of colors or sounds? What could such words as "mirror," "reflect," "see," "loud," "flash of light, " and innumerable others possibly mean to her? What right did she have to talk about the "azure blue of the sky," the "green grass," the "deep blue pools of water," or the "sound of the human voice"? Influenced by the academic preconceptions of the time, some psychologists contended that she had no "right" to use such terms, as they must be meaningless to her.

Helen Keller emphatically maintained that she had to use such words and expressions because there were no substitutes for them if she wished to communicate with her fellows. She maintained, moreover, that she understood these expressions. The idea of the mirror held no

difficulties for her because she understood the figurative meaning of "reflect." Such an expression as "I see" was understood and used correctly as in "I see my error," or "I see the point"; and she was able, by means of this sort of analogy, to grasp the meaning of "I see with my eyes." She compared her situation with that of a stranger on an island [with other people] where a language unknown to him is spoken. This stranger, she says, "must learn to see with their eyes to hear with their ears, to think their thoughts, to follow their ideals." (17:124)

Helen Keller also pointed out that ordinary people constantly talk about things they have never seen, sounds they have never heard, and feelings they have never felt. She might have called attention to the fact that color-blind persons speak of the green grass and the blue sky like the rest of us.

As between the theorist who asserts that words of color and sound can mean nothing to a deaf and blind person, and the deaf and blind person herself who insists that the words do have meaning for her and who uses them correctly, we feel compelled to accept the testimony of the latter. This is simply another instance of the way in which the thoughts, feelings, and speech of all persons, not only the deaf and the blind, are molded according to the patterns imposed by societies, languages, and social groups. It is not surprisng that the deaf and blind person should have conceptions and images of color. The language they have acquired permits them to see and hear.

Such a case as that of Helen Keller shows clearly that the use of symbolism in human life does not depend on any specific sensory data or exclusively on articulate language. Once people grasp the principle of symbolic activity, they may use a wide variety of substitute signs or cues in the organization of their behavior. The system of signs which we express in the audible sounds constituting the spoken English language may be translated into written symbols, into American Sign Language, into the system of dots and dashes of the Morse code, or into the intricate secret codes used in modern warfare. All of these external signs, when they are internalized in the thinking process, function in basically the same way as the spoken signs.

The Mentally Retarded

The mentally retarded are retarded in mental ability by reason of injury, disease, or constitutional deficiency. They are conventionally classified into various categories, and range from the severely retarded to the near-normal person. Subnormal individuals of the highest types can carry on simple conversation, but on lower levels almost no linguistic communication takes place.

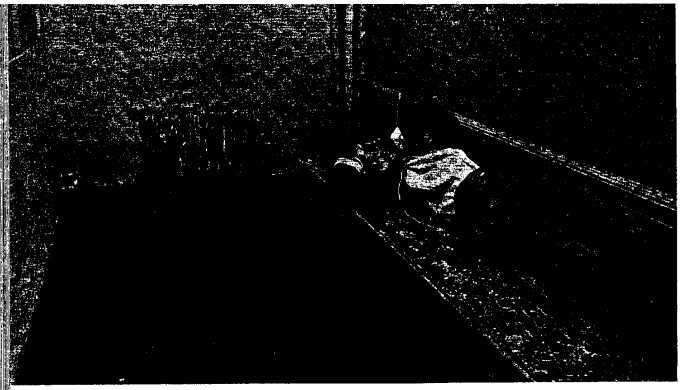
There are thus different levels of sign behavior among the mentally

deficient. These differences are revealed in different degrees of socialization, learning, and ability, and in performance on intelligence tests. They are also revealed in different capacities to organize behavior abstractly. An interesting inquiry along these lines was made by Werner. (33:175–76). He studied two groups of mentally retarded children, one group being more retarded than the other. The children were shown a screen in which there were four holes, and they were told that these holes were numbered 1,2,3,4. The investigator than pointed to the holes in a given order—for example, 1,3,2,4, or 4,2,1,3—and the children were asked to repeat the process. The more retarded children succeeded more often on this test than they did on another in which the holes were lighted up in various sequences and the children asked to indicate orally in what order they were lighted. The less retarded children did better on the second test than on the first. Werner interpreted these results as indicating that perception in the lower group is more personal and concrete, and that it becomes more abstract and impersonal with increasing mental ability. The gist of Werner's argument is that there are qualitatively different modes of mental organization among the retarded. Furthermore, Strauss and Werner (30) have shown differences of behavioral organization between those who are retarded because of injury to the brain and those whose deficiency is congenital in origin.

The retardation of the mentally deficient in the lowest categories is very much like that of blind and deaf individuals who have not been specially trained. Neither can enter into the stream of symbols that characterizes the human community. In the mentally retarded, a basically biological deficiency prevents the individuals from acquiring and manipulating symbols; in the blind deaf, it prevents them from learning, unless they are especially taught.

There is other evidence besides the kinds presented in this chapter on the destructive effects of social isolation or biological deficiency. Criminologists are familiar with the fact that in the early history of American prisons the "Pennsylvania system" sought to prevent the evil effects of association among prisoners by preventing them from communicating with each other. It was quickly observed by both American and European officials that this form of social isolation had very destructive effects upon personality. In extreme instances in which virtually complete isolation in solitary confinement was practiced, over a substantial period of time, derangement, mental deterioration, or suicide was the usual result. This scheme was quickly abandoned when its effects were noted, after having been adopted both here and in Europe with considerable enthusiasm and high hopes during the first half of the nineteenth century.

It is also said that seemingly senile people can and do show improvement when taken out of the back wards and given verbal and non-



Social isolation may have destructive effects upon the personality and in severe cases may mimic the symptoms of mental retardation, senility, or various forms of aphasia. (*Eric Kroll/Taurus Photos*)

verbal contact with normal people. Also, many people classified as mentally retarded lead normal, functioning lives in their local communities. One of the authors of this text was told of a fifty-year-old male who, although classified as mentally retarded in childhood, was elected steward of his local teamsters' union. An exceptionally able young sociologist of our acquaintance, who is a Chicano, was believed by at least one of his public school teachers to be a retarded child because of his inept performance in public school.

For many decades, some people attributed a special instance of supposed or imputed mental retardation to the so-called inferior races, meaning, mostly, black people. This debate reached its apogee during the poverty program years of 1964 to 1968, when it was focused specifically on children reared in urban ghettos. While racially biased people argued passionately about the impossibility of raising the IQs of blacks through any kind of education, well-intentioned liberals—both white and black—admitted the existence of those lower IQs, or at least some lower level of mental functioning, but pinned their hopes on compensatory and other special educational programs which might counteract the crippling effects of a "culturally deprived" environment. Although deeply entwined with political issues, the scientific question was, and is,

whether black ghetto children are only less informed and less interested in matters important to educated whites, or whether their mental capacities really suffer because of an impoverished environment.

In our judgment, the research that exists demonstrates the former but certainly not the latter. The IQ tests clearly have been biased against the performance of these children. The kinds of data which are more impressive than school- or test-collected data are those obtained in natural settings, such as that obtained by the linguist William Labov and reported in his *Language in the Inner City*. (18:354–56) These data demonstrate—when analyzed with linguistic techniques—a very high-level mental functioning of ghetto adolescents. For example, their spontaneous narratives reveal both a progressive complexity with the increasing age of the storyteller and a very high level of verbal and mental ability in general. Labov concludes his book with the statement that: "It should be clear that black English vernacular is the vehicle of communication used by some of the most talented and effective speakers of the English language."

Again, Labov's analysis of the popular verbal game of "sounding," a form of ritual insulting, shows the adolescents engaging in a very complex interaction wherein they display both a considerable virtuosity of verbal skill and of mental agility. Comparisons, similes, allusions, and puns abound in this ritual game. For instance, one form is (18:297–353), "Your mother so . . . she . . . ." Here are a few examples:

> Your mother so skinny she could slip through a needle's eye.
>
> Your mother's so skinny, about that skinny, she can get in a Cheerio and say, "Hula hoop! Hula hoop!"

Or, the similes get more complex and involve a "second subordination": "Your mother is so . . . that when she . . . she can . . . ." It is not easy to get all of this into one proposition in the heat of the moment during the fast verbal game. Thus, "Joe's mother was so dirty, when she get the rag to take a bath, the water went back down the drain." Not all children show the same aptitude in handling "constructions with this ability," but, in general, they certainly can perform quite capably. It is worth noting that not only are these collective interactions, but they represent a game. The characteristics attributed to mothers and other persons are purely fictional. Labov concludes—and his wording brings him close to our own understanding of the linkages among interaction, mental processes, and symbolic behavior—that "an understanding of ritual behavior must therefore be an important element in constructing a general theory of discourse." (18:353) Thus many individuals may be regarded as mentally retarded or uneducated simply because they do not speak the language of the dominant group in their society.

Behavioral Disorders of Aphasia

We shall use the term *aphasia* to refer in a general way to the loss or disturbance of language responses. Aphasia is often, but not necessarily, brought about by cerebral injury. Aphasic conditions may also be produced under hypnosis or by traumatic experiences. The loss of function may assume various forms, such as the inability to read, to write, or to name familiar objects.

The English neurologist Henry Head distinguished four main types of aphasic disorder: verbal, nominal, syntactic, and semantic aphasia. (13) We shall not concern ourselves with such subtypes of aphasic disorders other than to indicate that they exist and that the problem of classifying and naming them is a difficult one. Thus, the four types delineated by Head are not always easily distinguishable or sharply separated. The student should keep three points in mind: (1) *Aphasia* refers to a variety of disorders that have not yet been satisfactorily classified or uniformly labeled by all writers; (2) As these disorders vary in severity and in the type of linguistic activity effected, many aphasics are able to make significant statements about their own difficulties and experiences as aphasics. Of course, when the destruction of the language function is relatively complete, this is not possible; (3) The brain injuries that produce aphasia vary greatly in nature and severity and it is sometimes very difficult and often a matter of controversy to distinguish disabilities that are the consequences of loss of some part of the language function from those that are not.

Some idea of the nature and variety of speech-related disorders produced by brain injury may be obtained by considering some of the commonly used terms in this field. Some of these terms are: *agnosia, apraxia, alexia, amusia, acalculia,* and *agraphia*. (2, 22) *Agnosia* refers to the person's inability to recognize objects presented to him or her by the senses. Thus, persons who cannot recognize a familiar object by sight, but do so at once upon feeling it in their hands, are said to be afflicted by *visual agnosia*. The opposite situation, in which an object is recognized when it is seen but not when it is felt, is *tactile agnosia*. *Alexia* refers to difficulty in reading, and *agraphia* to difficulty in expressing one's thoughts in writing. *Amusia* refers to the inability to understand or appreciate music or to hum, whistle, or carry a tune; the term *acalculia* is used to designate disorder in processes of dealing with numbers. *Apraxia* designates difficulty in voluntarily formulating a general plan involving a series of purposive movements. By way of illustration, R. Brain (2:118) cites the case of an apraxic patient who could not relate himself spatially to his clothes and was therefore unable to get into them.

In a follow-up study after Head's work a team of British investigators, W. R. Russell and L. E. Espir (27), used wounded soldiers of World War II as subjects just as Head had used those of World War I. Russell and Espir note that in right-handed persons aphasia is ordinarily produced only by injury to the left hemisphere of the brain. By careful study of the location of the wounds they were able to indicate the brain area in which the language functions appear to be integrated. They observed that even small wounds in the center of this area can create disorder in all aspects of speech behavior and also can produce mental confusion. They called this type of disorder *central aphasia*, in contrast to other types produced by wounds that are nearer to the periphery of the language area. (27:170) Thus, a peripheral injury may make it impossible for individuals to express their thoughts aloud in words even though they may indicate by other means that they understand and that their inner thought processes are intact. This is often called *motor aphasia*. All of these disorders, and others not mentioned here, occur in a wide variety of combinations and are designated by a confusing array of special terms by different investigators.

Aphasia may occur in children as well as in adults. Its effects, however, are different; this difference may perhaps be accounted for in general terms by noting that adults possess a great many skills and behavior patterns that are originally acquired with the aid of language and that do not necessarily disappear with aphasia. In the child, on the other hand, a relatively minor or peripheral defect such as deafness may prevent the acquisition of language, and this in turn will prevent the child from acquiring the complex functions and patterns that must originally be learned with the aid of language mechanisms. It may also be observed in passing that deaf mutes who communicate with sign language may also suffer from aphasia.

INTROSPECTIVE REPORTS OF APHASICS

Some of the most significant materials on aphasic thought are to be found in Head's work. The comments made by some of his patients are interesting and provide a certain amount of insight into their condition. One of them said (13:256):

> When I think of anything, everything seems to be rolling along. I can't hold it. . . . I can see what it is. I seem to see it myself, but I can't put it properly into words like you ought to. I can see what it is myself like. My mind won't stop at any one thing. They keep on rolling. Myself, I imagine when you're talking you're only thinking of what you're talking about. When I'm talking to anybody it seems a lot of things keep going by.

Another patient, attempting to explain the difficulty he had in finding his way about London, said, "You see it's like this: with me it's all in bits. I have to jump like this," marking a thick line between two points with a pencil, "like a man who jumps from one thing to the next. I can

see them but I can't express. Really it is that I haven't enough names." (13:371)

A number of interesting comments by these patients indicate that images and the flow of imagery are profoundly affected by the loss of language that occurs in aphasia. Head always asked his patients to draw pictures, both from a model and from memory. One of the patients who had drawn a jug from a model could not do it from memory. He commented as follows (13:193):

> I was trying to see the glass bottle; the picture seemed to evade me. I knew it was a bottle, and I could describe the drawing. But when it came to seeing it as a picture, I was more or less nonplussed. I often seem to have got the picture, but it seemed to evade me.

When this patient was questioned further it became clear that he experienced images, but that they appeared to be unstable and could not be controlled or evoked at will. He said, "The more I try to make them come the more difficult it is to get in touch with them, as one might say." (13:195)

Head performed the following test with one of his patients. He rolled bits of paper into wads and had a contest with the patient to see who could toss the improvised balls more accurately into a basket placed some distance away. The aphasic proved more adept than Head. Then a screen was moved in front of the basket so that the basket was not visible, and the contest was repeated. This time Head did far better than the patient; the patient seemed to be at a loss as to what to do. He explained his difficulties (13:208):

> When I could see the basket I could follow the line of vision; when it was in the same place. . . . I'd seen the basket before you put the screen there; I knew you hadn't changed the position, but in some odd way I didn't feel perfectly confident in my own mind that it was in that position.

We noted in an earlier chapter that it is through the internalized use of language that human beings are able to imagine objects and events that are removed in time and space. This point is neatly corroborated in the study of aphasia for, as the preceding quotations show, the aphasic's flow of imagery is so disturbed that he is unable to visualize objects adequately when they are not immediately within his range of vision.

The inability of some aphasics to deal with objects that they cannot see or touch but must merely imagine is brought out in a curious manner by their inability to strike an imaginary match on an imaginary matchbox, to drive an imaginary nail with a nonexistent hammer, or to demonstrate with an empty glass how one drinks water. These same patients are able to strike actual matches, to drive actual nails, and to drink water from a glass when they are thirsty. Goldstein (10) described these and other inabilities of the aphasic as a regression from an abstract or categorical attitude toward the world to a more concrete attitude.

DISTURBA
OF VOLUN
ACTIVITIES

It is clear from the foregoing reports that aphasics appear to have lost a certain flexibility of orientation so that they no longer seem to be at home in the world. We may put this in descriptive terms by saying that aphasics are not self-starters. Because they cannot talk effectively to others or to themselves about things or persons that are not actually present, their whole inner life is impoverished and simplified, and their freedom of thought and action is largely lost. They are more or less at the mercy of the external stimuli that play upon them.

Aphasics are often able to function adequately or normally in simple concrete relations. But when they are required to act, as all persons constantly are, on the basis of long-range goals or abstract principles, or of merely remembered events, objects, or persons, they tend to fail. This limitation to the concrete present makes impossible much of the voluntary, or "creative," kind of human behavior. Aphasics are unable to make these verbal formulations; therefore their responses are piecemeal, unintegrated. They respond to each concrete situation as such; and when no immediate demand is made upon them, or when excessive demands are made, they tend to lapse into inactivity or anxiety, realizing that there is something wrong with their inner life.

K. Goldstein has shown how drastically aphasia affected the intimate social relations of one of his patients. The patient was a husband and father, and prior to his affliction he had been devoted to his family. During his stay at the hospital, however, he appeared to show neither concern nor interest in his absent family and became confused when any attempt was made to call his attention to them. A casual observer would have regarded him as callous and indifferent. Yet when he was sent to his home for brief visits he warmly displayed his former interest and devotion.

Goldstein concluded that this patient's "out of sight, out of mind" attitude toward his wife and family grew directly out of his inability to formulate his relationships to his family when it was physically absent. He could not imagine or conceive it adequately, and consequently he could not engage in internalized thinking about it. In short, when his wife and children were not visible to him he was unable to think of them, because he could not produce and manipulate the necessary verbal symbols.

FAILURES
PROJECTIO

In one of the most significant tests he administered to aphasics, Head required the patient, seated opposite and facing him, to imitate his movements. Head placed his left hand to his right ear, his right hand to his right eye, and so on. Then he repeated the tests while the patient observed and imitated these movements as they were reflected in a mirror.

The patients either had great difficulty with the first part of this test or they found it altogether impossible to imitate Head's movements, whereas they were generally able to imitate the movements correctly when they observed them in a mirror. The reason was not difficult to find. When the doctor and patient sat facing each other the patient could not imitate directly, but had to transpose directions (remembering that his left hand corresponded to the investigator's right hand, and so on). When Head's movements were reflected in the mirror, this act of transposition was unnecessary; all that was required was direct mechanical imitation.

In general terms, the significance of this simple but exceedingly effective test may be stated thus: it demonstrates that person's lacking language cannot project themselves into the point of view of another person. The patient is unable to guide his actions by imagining himself to be in some other position than the one in which he actually is. We may say that he is enclosed within his own point of view; that his point of view is, to use Piaget's term, *egocentric*. In a fundamental sense, normal adult social interaction rests upon the ability of persons to anticipate and appreciate the actual and possible reactions of other people—in short, to assume the role of another person. The loss of this ability in aphasia (in varying degrees, depending upon the severity of the disorder) thus provides powerful experimental and clinical evidence to support the thesis that language is the basic social and socializing institution.

DIRECT AND SYMBOLIC REFERENCE

Head made a distinction between what he calls *acts of direct reference* and those that require some sort of *symbolic formulation* between the initiation and the completion of the act. This distinction is roughly equivalent to Goldstein's distinction between the "concrete" and the "abstract" (categorical) attitudes. (11) Acts of symbolic reference imply a complex adaptation involving the recognition of signs, logical symbols, or diagrams. Acts of direct reference are organized on a simpler level.

Aphasics generally function adequately in acts of direct reference but have trouble with, or are unable to carry out, acts of symbolic reference. The contrasts on the following page provide a few illustrations of the difference between the two classes of acts.

Practically all the activities that are listed are either completely beyond the reach of subhuman animals or can be taught to them only with great difficulty. The acts listed in the second column are especially difficult for very young children to execute; they are generally learned later in life than the corresponding acts listed in the first column.

Not all the types of behavior listed in the second column are beyond the capacity of all aphasics. There is considerable variation ac-

Acts of Direct Reference	*Acts of Symbolic Reference*
Imitating the movements of the investigator as reflected in a mirror.	Imitating the movements of the investigator seated opposite, facing him.
Shaving.	Gathering together in advance the necessary articles for shaving.
Selecting from a number of objects before him the duplicate of one placed in his hand out of sight.	Selecting from objects placed before him the duplicates of two or more objects placed in his hand out of sight.
Tossing ball into a basket that he can see before him.	Tossing a ball into a basket concealed behind a screen.
Exact matching of colored skeins of yarn.	Sorting and arranging colored skeins of yarn in a systematic way.
Pointing to familiar objects in his or her room.	Drawing a ground plan of his room that shows the location of familiar objects.
Swearing.	Giving the name of the Deity upon command.
Recognizing familiar streets and buildings of a city.	Following directions within a familiar city.
Repeating, fairly correctly, the numbers up to ten and sometimes beyond that if he is given a start.	Carrying out arithmetical operations, particularly those involving numbers of several digits.

cording to the severity of the disorder and the type of aphasia involved. Moreover, aphasics often learn over a period of time to perform some of the more complex acts listed above, although usually with difficulty, by resorting to more primitive methods than the ones ordinarily used by normal persons. Thus patients who cannot follow directions in a city may learn a route by sheer repetition and memorization of landmarks. Similarly, they may learn to make change properly by repetition and memorization rather than by calculation.

UNRELIAB OF INTROSPE EVIDENCE

The data on aphasia indicate that introspective evidence of the role of language must be interpreted with caution. Just as other functions drop out of consciousness when they become automatic, so language may fade out of the picture when many apparently purely motor and other types of skills of which it is the basis are fully established.

To illustrate our point, one may ask if the game of billiards requires or presupposes language ability. Offhand there would certainly seem to be no possible connection between the propulsion of billiard balls on a green table and the ability to talk. If we ask billiard players

about the game, they tell us only that when they aim the cue they make a sort of geometrical calculation and have in their "mind's eye" a kind of geometrical image of the path which they wish the cue ball to take, striking first one and then the second of the two other balls involved. It would appear that language plays no part in this activity.

However, such introspective evidence is contradicted by the facts. Aphasics, even though they may have been skillful at billiards prior to the onset of aphasia, usually lose that skill along with their language ability. They report that they cannot visualize the three balls simultaneously and that they become confused. They do not know at what angle to strike the second ball and may even hit it on the wrong side.

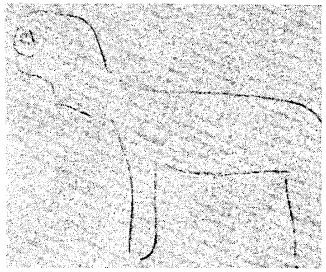
Similarly, one would suppose from introspective evidence that the ability to draw a picture of a cow, let us say, is totally unconnected with language and thus would be unaffected in aphasia. This is not so, as we have reported above. It was Head's standard practice to ask his patients to draw pictures of familiar objects from memory. He requested an English army officer, for example, to sketch an elephant. Prior to his illness, this officer had spent many years in India and had once shown rather good amateur ability at drawing. Nevertheless, the drawing he produced was exceptionally poor. It lacked some essential parts, such as the trunk and tusks; some of the parts were in wrong relation to one another; and, in general, the whole picture was scarcely recognizable as an elephant. Later, when the bullet wound that had caused the aphasia had healed and the patient had recovered much of his language ability, he drew upon request a detailed drawing of an elephant. The drawings are reproduced on page 233.

These are but two of the many illustrations available. They point to the conclusion that language may play a vital role in an activity without the individual's introspective awareness of the fact.

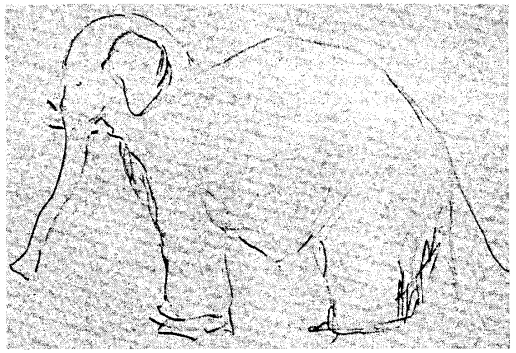
LANGUAGE IMPAIRMENT AND THOUGHT

We have had a great deal to say about language and thought in past chapters, emphasizing that the latter cannot exist without the former. Thought without language is reduced to the level of the thinking, if we may call it such, that is characteristic of lower animals. Those who study aphasia sometimes erroneously conceive of thinking and language as two entirely distinct and separate processes. Thinking, speaking to others, and speaking to oneself are inextricably interrelated and interdependent processes. Head has compared the aphasic with someone in solitary confinement whose only contact with the outside world is a defective telephone. While this comparison is picturesque, it is incomplete. When asphasics try to talk to themselves to formulate their own thoughts they use the same defective telephone.

The neurologists who study speech-related functions in the brain



The upper drawing was made by a patient with severe aphasia. The same patient made the lower drawing after he had recovered most of his powers of speech. (From Henry Head, *Aphasia and Kindred Disorders* [1926]).



generally agree with W. R. Russell and L. E. Espir that in the brain speech cannot be separated from thought. The Soviet psychologist A. R. Luria (20:34), in a book on aphasic disorders, also comments: "The reorganization of mental activity by means of speech, and the incorporation of the system of speech connections into a large number of processes, hitherto direct in nature, are among the more important factors in the formation of the higher mental functions, whereby man, as distinct from animals, acquires consciousness and volition."

Aphasia and related disorders, in their almost bewildering variety

of manifestations, serve to bring home to the normal person the enormous complexity of the language function and its interconnections with other processes. Russell and Espir observe that severe aphasia destroys the individual's capacity to enjoy reading a book. Aphasics may read slowly, absorb the meaning with difficulty, and lose the train of thought because the previous pages are inadequately stored or remembered. Russell and Espir note that there are a number of storage systems that aphasics must use in reading: (1) visual patterns acquired much earlier for the recognition of letters and words; (2) the associations that give meaning to the words; and (3) "the capacity to hold something of what he reads for long enough to correlate it with later pages." (27:145) These same writers observe that intelligence and personality are disorganized in severe aphasia. They add that some of the long-range effects of aphasia are loss of memory, difficulty in concentration, mental fatigability, irritability, and change of personality. "The scaffolding on which speech is developed," they add, "is built up in relation to hearing, vision, and the sensori-motor skill involved in uttering words." However, this scaffolding "is concerned with much more than speech for it seems to provide a basis for the psychological processes of thinking and learning." (27:170–71)

The normal human being finds it difficult to imagine how it feels to be an aphasic. There seems to be little in our experience that enables us to project ourselves, as it were, into the aphasic's position or to see and experience the impairment of thought that hinges upon his or her speech difficulties. We suggest that students play a verbal game with themselves in order to have a better notion of how it might feel to be an aphasic. Suppose that one makes believe that he or she is in a foreign land whose language he or she knows only moderately well. Conversation with others is necessarily reduced to rather simple and concrete levels, as considerable facility in the language would be required in order to exchange views on complicated, abstract, or philosophical matters. It is easier to talk, with the aid of gestures, about concrete objects that are present, such as the immediate scene and the weather. If an attempt is made to speak of events long past or far in the future or of objects out of sight; one's vocabulary proves insufficient. However, if one tries to carry on such a normal, slightly involved conversation, the effort is likely to prove exhausting. As an acquaintance of the authors once said:

> I went to bed exhausted every night from trying to speak German; particularly when I was with a lot of German people who were engaging in a crossfire of conversation. It was simply exhausting—after a while you felt you wanted to sit down and recuperate. And you felt absolutely frustrated and bottled up; you wonder if you're ever going to think a complex thought again in your life. You can ask for beer and coffee and potatoes, but when you have to discuss a complex feeling or reaction or analyze a political situation, you're simply stalled. You struggle to speak, but you're reduced to the level of your vocabulary.

Suppose that in addition to conversing with others in the foreign language, one also had to converse with oneself (that is, to think) using only this same restricted vocabulary. How difficult it would be to carry on internalized conversation that had any semblance of complexity!

Apropos of our imaginary verbal game, it is interesting to read the conclusion of an investigator who studied the imperfect English speech of two French children. (7) He noted that certain types of "breakdown" in their speech resembled the defects of aphasics. Breakdowns consisted of tendencies to simplify, to revert to more simple speech reactions, and to avoid speaking of abstract matters. Neither this nor our strenuous verbal game faithfully represents the situation of the aphasic, but both should give one an idea of the thinking impairments that arise from aphasic speech disorders.

The Social Isolation of the Schizophren

SCHIZOPHRENIC THOUGHT

A large percentage of persons in almost any hospital for the mentally ill is likely to be classified as schizophrenic. Although schizophrenia is a broad category including a very heterogeneous group within its boundaries, psychiatrists are agreed that schizophrenes suffer impairment of thought processes and disturbances of social relationships.

Generally speaking, schizophrenes have lost contact with society. Their speech is often unintelligible, partly because they invent words and partly because they give many ordinary words a unique signification and combine them in unconventional ways. As their use of language tends to be individualistic, schizophrenes cannot carry on sustained normal communication with normal persons. "The schizophrenic becomes so used to his own language that he is no longer able to tell people what he thinks, even when he feels like doing so." (15,35) Indeed, schizophrenes may develop their own *private language* with its own unique set of meanings which are expressed in a disjointed, temporal fashion. Sentences, as commonly understood, are not utilized. Novel words may be repeated, over and over again. This private language may be unique to each schizophrene. (35:130)

Conversation with a schizophrene leaves one with the feeling that both he or she and you have been talking past each other. Only those persons who know him or her intimately, or who have deep insight into the nature of the disorder, can make much sense of his or her utterances. For the schizophrene, the "demarcation between the outer world and his

ego is more or less suspended or modified in comparison with the normal." (10:23)

> The distinction between self and nonself . . . , the differentiation between a world of independent objects and one's attitudes and expectations concerning such objects, the distinction between the meanings one feels and seeks to convey and the semantic values of conventional words, the polarity between symbolic vehicles and objects . . . appear to break down, to varying degrees, in schizophrenic states. (34:254)

These features of schizophrenia are linked with and are indices of the impairment of intellectual processes. This impairment has been conceived of as a deterioration in normal ability to conceptualize and generalize. Goldstein (10:23) has concluded that schizophrenes give evidence of inability to reason abstractly. (Normal persons can assume both "concrete" and "abstract" attitudes.) E. Hanfmann and J. Kasanin (12:46–48) came to substantially the same conclusion from a comparative study of normal and schizophrenic persons. But they noted also that schizophrenes differ greatly in the degree of ability to reason abstractly, some showing little or no impairment. This might have been anticipated, in view of the heterogeneous character of the group psychiatrically classified as schizophrenics.

A psychologist, J. Hunt (14:10–19), has attacked the view that schizophrenes lack generalizing ability, believing this to be a hypothesis open to debate and lacking validation. A later study by Hanfmann and Kasanin (12) has a bearing on this question. They have listed five subcategories of schizophrenes arranged according to degree of intellectual impairment. Patients in one category suffer no discernible intellectual impairment, whereas patients in the other categories exhibit various degrees of it. This kind of refined classification suggests the direction that future research in this area is likely to take.

A study by H. Rashkis, J. Cushman, and C. Landis (26) throws additional light upon the controversy over the generalizing ability of schizophrenics. These investigators draw distinctions between "abstract," "complex," and "concrete" behavior (these, the reader may note, are in descending order). (26:70)

> *Abstract behavior* . . . the subject is actively able to grasp the essential aspects of a new situation, to behave in accordance with his attitude, and to account satisfactorily for his behavior. *Complex behavior* . . . the subject selected terms representing aspects of a possible situation without being able to account for his selection. *Concrete behavior* . . . the inability of the subject to grasp essential relationships, to arrange new material in a conceptual scheme, or to relate aspects of a new situation with regard to his own personal experience or sensory preference.

Subjects were given a sorting test. Only normal adults were able to sort on the highest, or abstract, level. Both schizophrenics and normal children (aged thirteen to fifteen years) could sort on the middle, or complex, level. It is interesting to note that paretics (syphilitic psychotics) were unable to attain any complexity or abstractness at all in their sorting; their behavior was entirely on the lowest, or concrete, level.

Few authors have maintained that schizophrenics actually revert to earlier modes of thinking as they retrace their development in reverse. Many researchers of schizophrenia believe that severe schizophrenes operate on a level of reasoning that is lower than the level on which they reasoned before they became severely disordered. However, the researchers maintain that recognizing this is something other than equating adult schizophrenic thought with childhood thought, either of schizophrenic or normal children. As H. Friedman has noted (9:96):

> This functional regression is not total: the schizophrene's perceptual functioning cannot be conceived of as being identical with that of the child; vestiges remain which reveal the efficacy of the individual's past, that is, the previous functioning on a higher developmental level. This is most clearly observed in the survival of a perceptual discreteness and plasticity of an order not attained by children, and in the variety of responses which point to a wider acquaintance with environmental stimuli.

Some observers think of schizophrenia as "regression." By this they mean that the patient loses the capacity to reason abstractly, and reverts to a lower (preadult) level of thought. The more severe the disorder becomes, the more his or her thinking regresses. This conception of a *peeling-off* or *lamination* process, as it has been termed, is based upon the assumption that the most complex thought processes appear in the developmental career of each person after and as a result of the appearance of simpler thought processes. Rather than explanations hinging on cognitive regression, schizophrenia might be better accounted for in terms of fundamental distortions in the communication process.

N. Cameron has given us an excellent summary description of the schizophrenic's plight, particularly with reference to communication (4:55–56):

> The continual interchange between a given person and those around him not only develops the social character of his language and thought, but also maintains it afterward at an adequate social level. For if this organization falls below the point of intelligibility where others can share it, and if it cannot then be amplified by other words, gestures, signs, or demonstrations, it can no longer function in communication . . . that is just what happens in schizophrenic disorganization. Social communication is gradually crowded out by fantasy; and the fantasy itself, because of its nonparticipation in and relation to action, becomes in turn less and less influenced by social patterns. The result is a progressive loss of organized thinking, and ultimately an incapacity for taking the role of others when this is necessary to enable one to share adequately in their attitudes and perspectives.

Summary

The lack or loss of language has serious behavioral consequences. Isolated children and the blind deaf who do not learn a language fail to become socialized human beings; they exhibit the types of behavioral disabilities that the analyses in preceding chapters would lead us to expect. Investigations of aphasia and schizophrenia also seem to confirm the importance of language as the integrative agent in human behavior.

We must, however, make some qualifications and reservations. The data on isolated children are meager; the same is true of the material on the blind deaf. Moreover, the phenomena of aphasia and schizophrenia are very complex and subject to controversy. Further research may show some of our interpretations to be wrong; certainly such study will lead to qualifications and refinements. Nevertheless, present knowledge about these several phenomena supports the general thesis that complex mental responses involve complex use of language symbols. Loss or lack of symbols leads to incomplete or inadequate socialization and development of the self.

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Selected Readings

BRAIN, R., *Speech Disorders: Aphasia, Aphraxia, and Agnosia*. London: Butterworth, 1961.
An interesting and well-written account that provides a good overall view of the many varieties of language disorder and the problems and complexities of this area of research.