
One of the world's leading authorities on bodily functions and their development offers some surprising additions to Piaget's work: the development of hearing and the perception of space.

ON THE PRIMACY OF HEARING

Moshe Feldenkrais

In the darkness of human foetal existence, there is little likelihood that seeing takes place. But even though there is no seeing, there is hearing. The foetus hears the heartbeat of the mother, the noises of her digestive tract, the noises of her breathing, the bubbling of gases, emphysematic disturbances in the breathing tract, or coughing, sneezing and other noises connected with the digestive tract. There is little doubt that the foetus is stimulated by these many sounds, but we cannot assert that he "hears" them in the way we do: simple response to organic stimulation is very different from the hearing that takes place after personal experience and growth.

This innervation of the ear is a stimulation coming to the foetus from the "outside," just as it will later be the case when the baby "sees" the world. But we know that the neonate does not actually see the outside world when he comes into it - unlike the ears, the eyes have not had any prior stimulation and learning. Indeed, it is generally understood that there is no seeing at all for the first few weeks, even though there is some response to light. It, then, stands to reason that the function of hearing is prior to seeing in each and every individual, just as it is prior in the development of evolutionary structures.

The function of hearing evolved as a response to mechanical vibrations. The ability to respond to finer vibrations, such as oscillations in the air, became true hearing when all of the structural complexity and fineness of the ear and of the nervous system had evolved—function and structure grow and assist each other in this way all along the path of evolutionary development.

An infant is, then, predominantly a hearing animal: the first experience of the world around us is initially sensory and then auditory, even though this slight priority is likely not significant. The first years of a baby's life are passed, not so much in seeing, but in learning to walk and to speak, i.e., the infant is largely sensory and auditory in orientation. A child's memory, his ability to imitate everything it hears, his ability to learn a first language depend on his orientation; later, however, the possibility of learning a second language reflects a greater role played by seeing.

Many people grow up without directly relating their seeing to the outside world; their internal security is based more on their hearing. Such people are especially sensitive to the inflections of the voice. The emotional content of the heard word means more to them than its meaning. In a similar way, most of us prefer to hear a teacher say something rather than read it, even though the latter way is more exact: hearing makes seeing more concrete and easier to remember and, therefore, to understand. This is the case with our short-term memory, without which we would not be able to relate the end of a sentence to its beginning.

As a child first begins to be trained in reading and writing, his hearing is gradually withdrawn from most of the space around him. He learns to pay increasing attention, sometimes exclusively, to that sector of space which he sees. In general, it is the case that we see only a small part of the space around us, even though in hearing we hear from all around us.

We see here a particular instance of something very general and fundamental: in learning to direct his attention to what his eyes see, the child withdraws his general watchfulness and becomes oblivious to the greater part of the space around him.

Later, he will learn to listen to the information of both his ears and eyes. He may already be capable of handling considerable stimulation in both ears and eyes, but he will have to undergo considerably more learning before he will have an undivided attention which can detect minimal or barely perceptible changes. But here again, he will listen mostly to his ears, checking the eyes for accuracy and detail.

When we arrive in the outside world

we have no inkling of what it is. This is because, at first, the stimulation of the senses carries no information other than the fact that the senses are being stimulated. The beginning of our acquaintance with the outside world is not only sensory but is entirely subjective. For a long time we know only a sensorial subjective reality. We are not, however, alone: always we are in communication with other human beings—parents, teachers, etc. Without ever stopping to think about it, we behave as if all these others shared the same subjective reality as we.

There are as many subjective realities as there are subjects. The one thing that is common to all these subjective realities is the one reality we use in communicating with one another: the one "objective" reality for all of us.

But, apart from this, there is obviously a third reality. This is Reality—with a capital R—that is understood to exist whether you and I are alive or whether we know it or ignore it. This is the Reality which must exist and must be there, whether men exist or not. When we use our thinking, and not only our sensing, we realize that this third Reality is more than likely the first.

This Reality is immensely complex and is only very superficially known, either to science or philosophy or in music or poetry. But our sense of self-importance makes us believe that our subjective reality is just as valid.

The "objective" reality is, finally, that part of our subjective reality which we are willing to concede to our fellow men. I can see that you can see and that you can read, but I can never believe that you can see as I can, or understand what you read as I do, even though logic forces me to recognize I must be wrong and have no grounds for thinking in this way.

My subjective reality is mine entirely and follows all my whims. "Objective" reality is less whimsical: it is the reality experienced by all men. It limits and restricts your and my subjective reality to that upon which all others agree. Subjective reality is anchored in us and is as real as our bodies. Objective reality is the measure of our sanity. But Reality has never as yet been perceived in its entirety. Our belief that we know Reality is an illusion, a Maya; it is a measure of our ignorance.

Mind you, I know that our conscious-

ness and awareness can grow. As these functions come to be properly understood and developed, we will be able to bite off, chew and assimilate a much greater chunk of Reality. This is possible because, from the very start of our lives, our nervous system is not bound by any reality: it is a *tabula rasa* when we come into the world. On a clean board you can write anything, and to make any new writing on the nervous system meaningful and superior, this new writing must be based on our choice and not upon chance.

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Each of us comes into the world with a nervous system complete for all the functions necessary to keep that nervous system growing and learning more and more complex activity: all the digestive functions, breathing, eliminatory mechanisms, restoring equilibrium, regulating temperature, heartbeat, maintaining invariant pressures of liquids such as blood, lymph, cerebrospinal fluid, chemical composition, healing and restoring every excessive change back to an optimal homeostatic condition were there—in short, everything that any animal born has in its nervous system—all organized to function and to rebound from accidental changes in functioning.

Many of my clients bring with them a nervous system with parts of it not organized at all. Only the structure is there with no connections to make it function. We have termed this initial state of neural structure—capable of functioning only after personal experience of reality—a *tabula rasa*. Reality helps the structure to organize itself to fit the surrounding medium in which it will have to live. Initially we could not speak any language, we could not walk, we could not read, we could not write, we could not sing, we could not whistle, nor could we yodel. We could not see a three-dimensional object on two-dimensional paper, and we could not

count. We had only this *tabula rasa*, capable of being organized to an astonishing facility to accomplish immensely more.

We could, in the beginning, have used our nervous system, the mouth, its muscles, the vocal cords, the feedback from the mouth cavity to the ears and auditory cortex to fit any of the two thousand languages and at least as many dialects with equal facility.

The human species did not start out by being anything but an animal, but ended up becoming the animal, *Homo sapiens*. All the other animals come into the world with their structures much more organized to function in almost rigid patterns. Their nervous systems are more complete, and the patterns of connections directing activity are almost set and unalterable but are fit for early action. The *Homo sapiens* animal has a tremendous part of his nervous left unpatterned, not connected, so that each individual, depending on the environment in which he happens to be born, can organize his brain to fit the surrounding demands. This his brain learns to do. The animal part ready at birth can do only what other animals do. His brain can learn what others can do in only one way, but it can also learn more ways of doing it.

The freedom to learn is a great liability; initially, it also is a restriction. There is no freedom of choice or free will when there is only one way of acting. Learning makes it possible to have alternative ways of performing anything. The ability to learn is synonymous with free choice and free will. But once learned the choice is made, the die is cast and the *tabula rasa* is no more. Herein lie the liabilities as well as the restriction.

Even as the awareness of being a *Homo sapiens* evolved only gradually, so also the traditional human ways of learning grew gradually and, so to speak, naturally. Traditionally, the process of education was never thought out, and the methods which came naturally when dealing with an infant have substantially remained the same. Considering that at the age of two our nervous system attains four-fifths of its ultimate size and weight, everything is basically set and learning will continue on these pre-set lines, in most cases restricting the freedom of learning and choice.

Most persons with neural malfunctions are not aware that the functions they have lost were originally *learned* and were not inherited as were their digestion or temperature regulation. Were these latter lost, then life would come to an abrupt end. But these unfortunates have lost *learned* organization and, like everyone else, they see no difference between the Homo sapiens part of themselves and the animal part. They cannot help themselves and neither can anyone else who is not aware of this difference. Many of the evils from which we suffer are rooted in our false understanding that human education is the training of a completed being to do this or that, as if we were making a computer perform a desired activity.

In spite of the apparent darkness of the human future, I believe we have not yet reached our Homo sapiens capacities for learning; it is still too early to condemn man on the strength of the small awareness he has acquired by chance and not by his outstanding ability to

reduce great complexity to familiar simplicity—in other words, to learn. We have never yet really used our essential freedom of choice and we have barely learned to learn.

It is difficult to choose a suitable example to illustrate the above, but here is a simple one that will show how very much a liability and restriction is our achieved level of learning and how we do not benefit from what our awareness allows us: while in your home or some familiar surrounding, blindfold yourself and live by your ears only. To begin with, do it for only half an hour. You will quickly realize how your awareness is mostly limited to what you can see. Any creature who had to guarantee his individual safety and security could not survive if two-thirds of the space around him was ignored and did not reach awareness.

When we pay attention to what we see we cannot help withdrawing our attention from the better part of the space around us. A wild animal that does not

have a Samurai-like awareness of what is happening around it and above it cannot endure for long. You and I can do what a trained Samurai can do: we can retrain and extend our awareness to the Reality all around us. The ears did just this before their information began to be partially ignored and neglected, and before vision became domineering instead of dominant.

If you continue this demonstration and rely exclusively on your ears for up to a few hours, you will realize how poorly we use ourselves even when our eyes are open. You will notice not only a change toward wider attention but the tonus of your entire being is heightened to a bouyancy and freshness. Some esoteric disciplines believe that in such a change the entire consciousness is raised to a higher level. At this level your memory will resemble more what it was during your early childhood before you learned to read. Moreover, your ability to learn and retain will equally improve.

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