

Why Is Speech So Much Easier Than Reading and Writing? Alvin Liberman, Haskins Laboratories. In Reading and Spelling: Development and Disorder. M. Joshi and C. Hulme (Eds) (1998)
A Highlighted and Condensed version by Charles Arthur.

Q. What must would-be readers know that mastery of speech will not have taught them?

Ans. A conscious understanding that words come apart into consonants and vowels.

Q. Why is (this consciousness) not necessary for speech? Why (are the) phonological structures (of words) that are common to speaker and hearer nevertheless not noticed by either?

Fact: phonological awareness is not a normal by-product of learning to speak. (The reason for this) should lay bare the critical difference between speech and reading/writing, and thus lets us see why the one is so much easier than the other. Moreover, when taken together with considerations having to do with the operation of the **phonological faculty**, they may enlarge our understanding of certain deficiencies that poor readers have.

In speech, phonologic and syntactic processing is not a matter of choice but mandatory. A writing system must preserve generativity at all costs, and our alphabetic system does it quite well, but only if properly used. **Proper use requires that readers attach the artifacts of the alphabet to the natural structures of their language, taking care to make the connection at the earliest stage. That done, the readers get all the rest of the complex processing for free, courtesy of the biological specialization for language that they own simply by virtue of membership in the human race.**

Thus, at the level of the word, the readers who have read **it right can deploy their powerful phonologic resources**, with the result that productivity is preserved and they are not reduced to treating words within the narrow limits that the nonhuman, non-phonological modes allow. In this connection, it seemed to be little appreciated in the reading community that the **phonology a reader can exploit** is not merely a list of sounds – or letter-sound correspondences – but rather a marvelous combinatorial scheme, unique to speech, that comprehends all the words the readers already know, as well as those they have forgotten, and those they have yet to learn.

At the level of the sentence, **no intellectual exertions are necessary once the readers have made proper contact with their natural language faculty**, for then even the most complex sentences will be handled **as easily as they are in speech**.

(If reading was) exclusively visual, (and thus by-passed the phonology of language) readers would be required to develop a wholly new mechanism, and one for which they had no natural bent, simply to do automatically. (In order to be successful), visual readers (would thus need to) invent a new system just to meet the unnatural demands of the visual way they had unwisely chosen to read. (Scientists concluded) that **language, including its phonological component, is a biological coherent modality in its own right**.

As for the difference between speech and reading/writing, it is plain that the former is a species-typical product of biological evolution, arguably the most apparent and defining of our genetically determined characteristics, in contrast to the latter, which is an intellectual achievement of an apparently difficult sort. (We have been talking) somewhere from 200,000 to several million year ago; but it was less than 4,000 years ago that some of our fellow humans discovered the alphabetic principle and put it to practical use. **The unique discovery underlying the alphabet was neither more nor less than what I have already identified as segmental phonology**, the part of grammar

that generates all words by variously combining and permuting a small number of consonants and vowels.

Seen that way, the alphabet was a triumph of applied linguistics. (But) why was it hard 4,000 years ago for all pre-alphabetic humans, and why is it hard now for the pre-alphabetic child? We might hope to find in speech the key to understanding why that structure was so hard to get from the printed page. (One characteristic of speech that was possibly relevant to the reading problem was that speech is not the acoustic alphabet so many had assumed it to be, and thus cannot be mapped directly onto the optical alphabet a reader must learn to use. (In speech, the units of sounds are not produced in discrete, temporal order. This would be painfully too slow.) Speech delivers phonological information at rates of 10 to 20 consonants and vowels per second. (This enables the listener to pay attention to the meanings.) Thus, an acoustic alphabet is impossible if people are to speak and listen as fast as they must. ... Units of phonology can be co-articulated – that is, overlapped and merged – with the further results that speakers can run them off at the high rates that characterize speech and make language possible.

The general consequence of co-articulation is that almost any piece of sound, no matter how short, carries information about not one but several units in the phonologic string. (This makes it very difficult for any alphabetic system to represent speech.) This is not to say that the underlying phonology is not alphabetically segmented, only that the segmentation is not apparent at the acoustic surface.

Thus, children who have mastered speech might nevertheless be unaware of the discrete (temporal) segments it conveys. In listening to a word, the children would not have heard a succession of discrete, segmented sounds. (Other than one, early studies did not reveal) all the reasons why awareness is lacking (in speech). (The one reason that was obvious) was that to help children learn to read someone should teach them how words come apart, because speech had not revealed to the children that they do, yet that was exactly what they needed to understand if they were to properly appreciate and apply the alphabetic principle. Once children had that principle, they would know what to look for, and thus further refinements in their understanding of the exact relation between the alphabetic script and the language could come with experience in reading, as the phonemic and morphophonemic regularities of the writing system revealed themselves. This would happen more readily, of course, if the teacher provided the right help by contriving exercises designed to make the regularities most apparent. As for the irregularities, enlightened instruction would introduce them gradually, while also showing that many were not so wholly irregular as they seemed.

In spite of the complexly encoded nature of the speech signal, phonological structures are in fact contained within it. Those structures must be produced and received by the speaker and listener, whether they know it or not, for if the structures were not, language as it has come to be would not exist. Moreover, it is possible to become aware of those structures, for, if it were not, alphabetic reading and writing as they have come to be would not exist. No matter, then, that the speech process itself is fully automatic, hence unavailable to consciousness as a process; for the listener, that process must nevertheless produce phonologic representations of which the listener can be conscious. The automatic process that derives meaning from speech need not, in principle, ever make available to consciousness the phonologic structure that are intermediate to its goal. ... The previously noted bad fit in segmentation between those representations and the acoustic signal is but one reason why there is, nevertheless, no awareness. (What then accounts for the fact that) awareness is not necessary for speech? (But necessary for reading an alphabetic language)

The conventional view of speech is that elements of speech are (ordinary) sounds, like any other sounds from a general auditory sort- pitch, loudness, and timbre. They can be no more phonetic than the percept evoked by the squeaking door. It is assumed that language simply appropriates for it uses the most general processes and representations of the auditory modality (and uses them for language). The (ordinary) nonlinguistic auditory percepts would have somehow to be connected to language. The conventional theory is that the necessary link is made at a cognitive stage, beyond perception, where the auditory percepts are associated with the phonetic units of language, and so, in effect, given phonetic names. (This renders speech a less than natural communication system.) To say otherwise is to claim that speech is an artifact, like the alphabet, and that does violence to the facts.

It has simply got to be, I think, that the percepts evoked by the sounds of speech are phonetic by their very nature. That is, they cannot be commonly auditory, as the conventional view would have it, but must rather belong to a phonetic modality that is as different from auditory as auditory is from visual. There is no need for some cognitive process to endow it with phonetic significance by giving it a phonetic name. On this view, what is evolved was a communicative modality. This one is linguistic in nature, and therefore has a phonetic component. (The sounds) are a distinct set, different from those we make with the same organs when we swallow, move food around in the mouth, or lick our lips. Having evolved to have a phonetic function, they serve no other. (The sounds) provide a common phonetic currency, good for all linguistic transactions.

I have proposed that all of this is managed by what we have called a “phonetic module,” a biological specialization that, like all such specializations, has its own domain, its own mode of automatic signal processing, and its own primitives. Speakers have only to think of the word, whatever that means; the phonetic module then spells it for them, automatically selecting and coordinating the sounds that form the phonologic structure. Small wonder the speakers do not notice that the structure is spelled, or how. (They do not need to know the phonologic structure in order to speak.)

Listeners are in a similar case. Presented with the speech signal, they need not puzzle out the complex relation between it and the segmented phonetic structure it conveys. That, too, can be left to the phonetic module, because its complementary perceiving face is specifically adapted to parsing the signal so as to represent phonetic structure by recovering the underlying sounds that are its elements. That is the reason why experience in perceiving speech does not automatically produce awareness of its essential phonologic constituents.

And, what about poor readers? The point is that the phonetic module cannot be expected to work equally well for everybody. It would follow then that the phonetic representations produced by a faulty module would be less than normally distinct and therefore that much harder to bring into conscious awareness. But, given that the module works only in the phonetic domain, the consequences, whatever they are, should be found there and nowhere else.

This tells me how speech differs from reading and writing, why it is easier.

(Connecting or attaching an alphabetic writing system to this “phonetic module” enables a reader to read as automatically as he/she can speak. Because of this biological faculty, humans are able to learn to read as well as they speak if the appropriate connections are made between the sounds in speech and the letters of the alphabet. See first few paragraphs of this article)