Chapter IV

# Languages of the Future

Our languages set us apart from all other species. Human societies are what they are, in large measure, because of their languages. If we had not developed our languages, we would still be living in animalistic or primitive states. Our languages have enabled us to build the social, economic, political, industrial, technological, scientific, legal, and philosophical systems that are the fabric of our present-day civilizations. The evolution of our civilizations has been related in many ways to the evolution of our languages. In the last few decades we have seen a rapid acceleration in the evolution of our languages. The use of English around the world is increasing faster than any other natural language. And English as a linguistic medium is undergoing rapid and dynamic changes. Also, we are witnessing marked growth in the formal language known as mathematics and in our computer and programming languages. On the other hand, we are seeing many of our natural languages fade away because of limited use, especially those without systems of writing and those in which little is published.

In this decade we shall see even faster and more sweeping changes. We are now at a point in our linguistic and scientific development where we can look at our natural languages objectively and constructively. We can see them as the imperfect inventions and arbitrary conventions that they are. We are now able to understand many of the inherent design deficiencies (perceptual, logical, functional, practical, etc.) in our languages that unnecessarily limit their effectiveness. Those who have participated in the development of our natural written languages have known little about such things as our perceptual and cognitive capabilities. The problems of writing and speaking were, quite naturally, their primary concerns. And their solutions to the problems were highly ingenious, in view of what they knew. But the problems of reading received little consideration. Our knowledge of our perceptual and mental processes is still quite limited. We do know enough, however, to create languages that can help us better utilize our perceptual, cognitive, and creative potentials. We are now capable of designing the kind of language that is described on the pages that follow.

## Reading Sentences Instead of Words

Reading one letter at a time is slower and less efficient than reading one word at a time. A word is more easily understood if it is seen as a single unit of meaning, rather than as a series of related letters. Similarly, reading words one at a time is slower and less efficient than reading logically related groups of words (or *meaning units* – see Chapter I). For example, if we read a 20-word sentence one word at a time, then 20

fixations are required to assimilate the sentence. If the sentence is divided into four meaning units, then only four fixations are required. In the first case, it's necessary to relate the 20 pieces of the sentence to each other, and in the proper manner, to comprehend the sentence. In the second case, the sentence can be comprehended by simply relating the four meaning units to each other – a far easier task.

Comprehension might be easier still if we could take in an entire sentence as a single meaning unit. If all the parts of a sentence could be seen at once, the message might be easier to understand. But, with our present-day languages, the only sentences we can see with a single fixation are the very short ones. The languages we now use are highly inefficient from the perceptual standpoint. Our languages make poor use of the very extensive capabilities of the human visual system and its related mental apparatus (see discussion in Chapter I). The kinds of symbolization used in our written languages were not developed with the aim of achieving high levels of perceptual efficiency. Thus, while we seem to have the perceptual and cognitive capabilities of seeing at one time the information contained in most sentences (at least simple sentences or clauses), we do not have a language that will permit us to use those capabilities. But we now know how we can devise perceptually more efficient languages, languages that are easier to see, easier to read, and easier to comprehend. In fact, one organization, The Center for Advanced Study in Linguistics (discussed later in this chapter), will soon initiate a program to develop such a language. That language is described below.

**A Language Called *"Easy"***

The name tentatively assigned to the new language is *Easy.* The name was selected because it will be designed to be easy to read – and also because it will be easy to learn, easy to remember, easy to understand, easy to write, easy to speak, and easy to use with computers. The name was also selected to continually remind the developers of one of the primary requirements of the language.

*Easy* will be designed for expression in three forms: one spoken form and two written forms.

Spoken *Easy* will be characterized by its regular and consistent relationship with its written symbols, by its lack of homophones (homonyms), by its efficiency, by its euphony, and by the ease with which most people will be able to learn it. The regular relationship between the sounds and written symbols will largely eliminate the need for spelling training. Conversely, the pronunciation of any written word will be self-evident because the symbols will consistently require the same sounds. The regularity of spoken *Easy* will also make it possible for individuals to converse effectively with computers, unlike our natural languages, which make human/computer conversations

extremely complex and difficult. Because we usually learn spoken languages before or at the same time as written languages, spoken *Easy* will facilitate the teaching and learning of the written language forms.

Our spoken languages are not as perceptually efficient as our written languages, so there is not the same opportunity for improvement in efficiency. Nevertheless, spoken *Easy* will be designed to be as simple and efficient as possible, while at the same time giving the poet, the actor, and the lover, as well as the scientist and scholar, an effective means of expressing themselves. And the diction differentiation of individuals and classes that is now so apparent in human societies will be lessened by the new spoken language.

The two written forms of *Easy* will be (1) **linear** (like one-line muglyphs) and (2) **planar** (like multi-line muglyphs). The planar form will be the primary form. It will be designed first. The linear form will then be derived from the planar form. This will be a reversal of the linear-to-mu conversion procedures that we now use to format information in the mu typography. The planar form will be primarily for readers and will be designed to conform to – and to optimize the use of – the human visual system. The linear form will be designed for sighted writers and for programmers and will be similar, in many respects, to the natural written languages that we use today.

What kind of perceptual and logical characteristics will the planar form of *Easy* have? The most obvious and striking feature will be in the symbolization that is employed. As a written language, the characters and symbols will be designed to secure optimum use of the high acuity areas of the human retina – and also use of the peripheral areas. Information in *Easy* will be displayed in symbol-clusters that conform to the array and capabilities of the photoreceptors in the retina. The *Easy* symbol-clusters will be called, of course, *muglyphs.* The *Easy* muglyphs will generally contain more information than those in natural languages because of the perceptual efficiency designed into the *Easy* symbolization. The *Easy* muglyph will be equivalent to a simple sentence or clause in English. When an individual is reading information in *Easy*, he or she will normally take in one *Easy* symbol-cluster with each eye fixation.

*Easy* will employ two or three types of symbols. The symbols in the center of each cluster will be *core characters* that will fall on the reader's macula lutea (see Chapter I) and nearby retinal areas. The core characters will be surrounded with relatively large and simple *peripheral characters.* The meaning unit's core characters will be relatively intricate and will employ the macula's fine discrimination capabilities. The peripheral characters will fall on the extra-macular areas of the retina and will, therefore, be markedly larger than the core characters. The core characters will be the primary content characters of the muglyph. The peripheral characters will function

largely as indicators; that is, they may show such things as (1) the relationships of the various elements of the core (although the core characters' relative positions will also show relationships to some extent), (2) grammatical characteristics such as number, tense, case, and gender, and (3) the relationship of the muglyph to the preceding and following muglyphs. Additionally, the peripheral characters will serve functions equivalent to punctuation, capitalization and indentation.

The presentation of two-dimensional symbol-clusters to readers instead of linear character arrays should facilitate comprehension as well as perception. Comprehension should be easier because the planar relationship of the characters will make it easier to show (and see) the respective relationships of the characters in the muglyph. The planar arrangement of core characters, as well as the peripheral characters, will lessen the need for special symbols and other linguistic devices such as inflectional variations and auxiliary words to show syntactical and grammatical relationships. This is one reason why *Easy* will require fewer symbols than conventional written languages to express most verbal messages.

There are other reasons why fewer symbols will be required to communicate visual information with *Easy.* One is the number of characters that will be employed. Generally, there is an inverse correlation between the number of characters employed in a language and its perceptual efficiency, up to an optimum of several hundred. *Easy* will probably employ 1024 characters – or possibly 512 or 2048. The majority of the *Easy* characters will be content characters that will be used in the core of the muglyph. Many of the content characters will be equivalent to words in English, the most frequently used words. Many others will be equivalent to roots. Others will be equivalent to prefixes and suffixes. Probably 64 or 128 of the content characters will be the equivalent of alphabetic or numeric characters, such as those used in English and the other Indo-European languages. The other characters will be (1) *indicator characters* and (2) vacancies (to allow for the addition of characters if it becomes apparent that some new ones are needed or desired – or to allow for the use of optional characters for special purposes).

Another sensory dimension that may be added to *Easy* to further facilitate comprehension is color. The majority of individuals can discern many different colors, but our present-day written languages make no use of this capability. The percentage of individuals who do not have normal color vision is so great, however, that it would not be practicable to incorporate color as an essential part of the *Easy* system. Also, while color can be easily incorporated in computer-generated images, incorporating color into handwritten information is not feasible. So, colored core and peripheral characters might be used simply to provide additional, but duplicative, information about the functions of the characters. Thus, while color-blind individuals will be able to fully understand the *Easy* muglyph, it will be even easier for the

readers who can see the color differentiations. The colored symbols might also increase the esthetic satisfaction one gets in reading. Research and experimentation may show the use of colored characters to be ineffective and/or impractical, but, in developing the language, the use of color will be considered as a supplemental dimension that could enhance comprehension.

Another feature of *Easy* that will make it both more usable and more acceptable will be its computerizability. The so-called "natural" languages are not effective instruments for data manipulation or for human/computer interaction, particularly the more irregular ones like English and French. *Easy,* however, will be designed as a language for computers as well as for human beings. The design of *Easy* as a computer language will greatly simplify the learning of the new language because computers will be able to provide most of the instruction needed to learn it. Other types of computer-assisted instruction should also be easier, faster, and more effective with *Easy.*

Will *Easy* succeed while other "universal" languages have failed to gain widespread acceptance? *Easy* is not being proposed as an universal language. Instead, it is being proposed as a language for readers – and as a computer language. If it substantially improves people's ability to assimilate printed information, if it facilitates their ability to communicate with computers and with other people, and if it is easily learned, and if it helps people satisfy their needs, then many will accept it and learn it and use it. And, while it is not proposed as an international language, if it comes into widespread use, it could come to be used as a universal second language (much as English is now).

**A Language from a Castle, but not an Ivory Tower**

Who will develop *Easy?* If it is to be done well, it will be a cooperative venture that will include many individuals from many disciplines, from many linguistic groups, and from many nations. That kind of effort will be necessary if *Easy* is to achieve both a high degree of effectiveness and a high degree of acceptability. The focal point of the effort will be The Center for Advanced Study in Linguistics. The CASL will be a not-for-profit organization established to work toward the development and employment of such a language. The CASL will be endowed with and financed, in part, through contributions from The Mudoc Corporation.

[The CASL will accept applications from individuals interested in participating in the creation of the new language. It is expected that prospective CASL research Fellows will seek the sponsorship of a government, scientific society, foundation, or other sponsor to finance their fellowship. These requests for sponsorship should include adequate funds for the Fellow's stipends, for one research assistant and one secretarial

assistant, as well as for special equipment or services that might be needed by the Fellow. Those prospective Fellows who are not successful in acquiring outside sponsorship will be able to apply directly to the CASL for a fellowship, describing what they have to offer and stating their salary and other needs.]

**Beyond *Easy***

The creation of *Easy* will be one step beyond our present position, but we can expect to see many other advances in our linguistic tools and behavior.

One far-reaching change that has already started is the different way in which people are starting to talk about and think about their world and themselves. The findings of modern physics are leading to some general changes in the way we use language to describe and analyze natural phenomena, particularly phenomena involving human behavior. Modern physics is making us aware that the world we perceive through our senses and that we structure with our systems of logic and language is very different from the world of particles and energy in process about us and within us. As we become more aware of the kind of world depicted by the modern physicist, we become increasingly aware of the great gulf between our simplistic descriptions and analyses of phenomena and the extremely complex and dynamic nature of the actual phenomena. As we become more aware that what we say has very limited correspondence with the things and processes we are discussing, we stop taking so seriously and dogmatically the statements we make. The "particle perspective" given to us by modern physics is countering the common mind-set that there is some mystical relationship between our words and the natural phenomena being discussed (for example, that a statement is "true" if there is a definite, fixed, and precise correspondence between the statement and the phenomena to which the statement refers). The linguistic reorientation achieved through the perspective of modern physics provides a kind of flexibility and adjustability that is not achievable when talking and thinking in the old ways.

There are other kinds of advances in linguistics that can be speculated about – analog languages, metalanguages, microlanguages, translanguages, ultra-high-level computer languages, etc. Whatever the future holds, the next few decades are almost certain to be the most interesting in the history of language development.

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