

March 15, 2004

PATENTS

An Effort to Make Arabic Easier

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Diane Bondareff for The New York Times

To counter his daughter's aversion to learning the language of her heritage, Saad D. Abulhab devised a simplified alphabet. It may prove useful in computers as well.

THE hurdles of learning Arabic as a second language are daunting. Arabic is written right to left, and each letter can take one of four forms, depending on where it appears in a word. Finally, Arabic is printed and written only in flowing script, never as individual letters.

Those obstacles can be overwhelming for students of the language - and for computer programmers trying to render Arabic characters on screen - at a time when there is a critical need for clear communication between the West and the Arabic-speaking world. In fact, it can be a challenge even for some native Arabic speakers to learn to read and write in their mother tongue. That is what led Saad D. Abulhab to patent a simplified Arabic alphabet that he says is easier to learn.

"The whole thing came about because my 6-year-old daughter did not want to learn to read Arabic because she said it was written backwards," said Mr. Abulhab, an Iraqi-American who was born in California and spent his childhood in Baghdad. He earned a

master's degree in library science and is now director of technology at the Newman Library of Baruch College in New York. He lives with his family in Milford, Conn.

"That gave me the idea to make it bidirectional, with letters that went both ways but didn't lose their characteristics," he said. "It's your choice how to use them. Like with Chinese, which was originally written top to bottom but now is written mainly left to right by many young Chinese."

Mr. Abulhab created an Arabic alphabet that replicated some of the simpler principles of written English. He designed letters that took one form wherever they appeared in a word, could be printed in block style, and could appear as separate letters instead of connected in cursive form. That alphabet could then be written from left to right for those more comfortable with the pattern of English, or from right to left in the traditional Arabic manner.

"For someone like me, who learned right to left, I would prefer to read it right to left," he said. "But my daughter could choose from left to right. Since the letters look exactly the same, you can choose how to arrange them. Like simplified Chinese and traditional Chinese; those two coexist."

But he says he does not want his invention to be thought of as a replacement Arabic alphabet.

"I love Arabic calligraphy," he said. "I like to think of this as a variation on traditional Arabic. It's a good tool to break the barrier of fear for someone to learn without right-to-left direction or changing shapes."

"It's based on Arabic calligraphy so the Arabic-reading eye will recognize it," he added.

In designing his alphabet, Mr. Abulhab drew on script from 22 languages based on Arabic, like Persian, Kurdish and Urdu. The task took two years because of the complexity of traditional Arabic: each Arabic letter has four shapes, for example, depending on where it appears in a word - at the beginning, middle, end or by itself. Mr. Abulhab said his goal was to create one universal shape for each letter.

The shape-shifting nature of Arabic letters also means that computer software needs a lot of extra programming power to render an Arabic font.

"For Arabic or Hebrew, you need software that goes from right to left," Mr. Abulhab said. "For Arabic, in addition, you need to add a shaping engine. When you type a letter, for instance, it has a shape. But when you type the next letter, the first one changes completely."

"It's like dancing letters on the screen," he said. "To my eyes it's very annoying."

Mr. Abulhab hopes his alphabet will ease matters for Arabic-language students and software programmers. He says he believes that students who learn to read Arabic with his alphabet will more easily progress to reading traditional newsprint, books, signs and other printed script.

"Once they can read my letters, the shapes will stick in their minds, and if they arrange them right to left, it should be good enough for newspapers," he said. "It's a good first step. They could learn the shapes and the shapes are pretty universal."

Mr. Abulhab calls his alphabet Arabetics, a word he says he coined "to be more descriptive and inclusive of people who speak languages other than Arabic, like Persian or Urdu." He also received a design patent for a font - called Mutamathil, meaning "symmetric and uniform" - based on the alphabet.

Mr. Abulhab said that in informal tests most Arabic, Urdu and Persian speakers had no trouble reading texts that used his generic alphabet.

"I've tried it on people who have never seen it, and I am surprised how easily they read it from right to left," he said. He hopes to obtain grants for further work on the alphabet, and to generate interest in his patent from software manufacturers like Microsoft or Adobe. He received patent No. 6,704,116.

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