



After having designated 1972 as International Year of the Book, Unesco appealed to the International Council of Graphic Design Associations (Icograda) to design a symbol; Michel Olyff, a Belgian graphic designer, was selected. The illustrations above are from an article by Olyff in *Communication et Langues* (114, Champs-Élysées, Paris 8e), reprinted here with kind permission. "I know how to draw a book; I don't know how to draw a year!" Olyff lamented. Abandoned ideas are shown (top): the globe is a cliché; "72" is not meaningful around the world. He decided to show an open book and people holding hands (middle) in a simple form so that "the child of the delta could trace it in the mud and the child of the city could write it on walls." He tested optical deformities (below left) and arrived at the final form seen here in typographic context.

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On Effects of Indentation and Underlining in Reference Work

Dirk Wendt and Hans Weckerle

An experimental study with 252 10- to 12-year-old pupils as subjects investigated the effects of indentation and underlining of keywords in reference work. It was assumed that indentation and underlining would make it easier to recognize word shapes, and that this effect would be stronger with the familiar shapes of meaningful words than with nonsense words. Results showed that only indentation made recognition faster, but not underlining; and that this effect was equally strong with meaningful and nonsense words. In total, nonsense words were recognized 17% slower than meaningful material.

This experiment was designed to explore the influence of indentation and underlining on ease of search in reference work. The theory behind it is that both indentation and underlining help to isolate key words, and thus tend to make their characteristic shapes easier to recognize. This effect was assumed to be stronger for the familiar shapes of well-known words than for nonsense words of equal length.

Subjects

Subjects in this experiment were 252 boys and girls in a "Gesamt-schule" in Nordrhein-Westfalen, between 10 and 12 years old. Studies on legibility have shown that reading habits are rather stabilized at this age (Buswell, 1937; Ballantine, 1951); i.e., normal readers of this age perceive word shapes the same way adults do. Thus, we can consider them representative of adult readers with respect to the word recognition habits in question.

Method

The subjects were given 8×12 -inch sheets of paper containing two columns of 40 numerated five-letter words. The second column contained the same words as the first one, but in a different order. The subjects' task was to go down the left column, word by word, and to

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Visible Language, VI (Spring 1972), 167-171.
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Regular
(Form A)

	Meaningful German words		Meaningless words
1	bauen	1	saven
2	sanft	2	mulko
3	gehen	3	ensim
4	ruhig	4	parik
5	offen	5	parsi
6	heben	6	kuval
7	unten	7	perus

Indented
(Form B)

1	bauen	1	saven
2	sanft	2	mulko
3	gehen	3	ensim
4	ruhig	4	parik
5	offen	5	parsi
6	heben	6	kuval
7	unten	7	perus

Underlined
(Form C)

1	<u>bauen</u>	1	<u>saven</u>
2	<u>sanft</u>	2	<u>mulko</u>
3	<u>gehen</u>	3	<u>ensim</u>
4	<u>ruhig</u>	4	<u>parik</u>
5	<u>offen</u>	5	<u>parsi</u>
6	<u>heben</u>	6	<u>kuval</u>
7	<u>unten</u>	7	<u>perus</u>

find as fast as possible the same word in the right column, and write down its number. Dependent variable was the number of words correctly identified within a given time of 5½ minutes. In a pilot study, this was found to be an optimal amount of time for this task to get enough variation between subjects and groups to analyze the data appropriately in the context of a time-limit study rather than a work-limit study, which is more economical without losing precision (Tinker & Paterson, 1930).

Six different stimulus sheets were designed and printed, corresponding to six different experimental conditions. Three of them contained ordinary familiar German five-letter words of about equal relative frequency in the language; three of them contained nonsense five-letter words (which actually were truncated Finnish words, a language unknown to German children). One of each of these two sets of three Forms contained straight columns of words, flush left, ragged right, without indentation and underlining (Form A). On two other Forms (again one with meaningful, one with nonsense words) every other word was indented about three letter spaces (Form B), and the last two Forms showed separating horizontal lines between the words (Form C). See Figure 1.

Thus we end up, finally, with six different forms:

Form A_m: regular columns of meaningful words

Form A_n: regular columns of nonsense words

Form B_m: indented columns of meaningful words

Form B_n: indented columns of nonsense words

Form C_m: regular columns with underlined meaningful words

Form C_n: regular columns with underlined nonsense words

Each of these Forms was presented to a total of 42 subjects. Actually, the experiment was run in small groups in the classrooms. These actual groups were mixed of subjects using different Forms such that eventual experimental errors in the administration of the tests were evenly distributed over the experimental conditions.

Figure 1. Examples from the six different stimulus sheets.

TABLE I. Average numbers of correct identifications (and percentages of standard regular meaningful) during the given time limit with the 6 different forms.

Material Display layout	Meaningful words (m)	Meaningless words (n)	Both
Regular (Form A)	23.56 (: = 100%)	20.11 (85%)	21.84
Indented (Form B)	25.39 (108%)	20.89 (89%)	23.15
Underlined (Form C)	23.16 (98%)	19.30 (82%)	21.23
All layouts	24.06	20.12	

TABLE II: Analysis of variance between the means given in Table I:

Source of variation	SSQ	df	MS	F ratio
Total	4.184.5	251		
Meaningful vs. meaningless	968.34	1	968.34	78.28 p < 0.01
Between layouts (displays)	153.3	2	76.65	6.196 p < 0.01
Between cells	1.141.2	5		
Interaction	19.56	2	9.78	< 1 n.s.
Within cells (error)	3.043.3	246	12.37	

Results

Table I shows the average number of correct identifications of the 42 subjects in each group. The result of a two-way analysis of variance on these data is reproduced in Table II. The data show significant differences between meaningful and nonsense words, and also between typographic arrangements. On the average, 24.06 meaningful words were identified correctly, and only 20.12 nonsense words. In Form A (straight columns), 21.84 words; in Form B (indented), 23.15 words; and in Form C (underlined), 21.23 words were identified correctly, on the average. Orthogonal comparisons of Form B against Forms A and C showed a significant difference between these groups of Forms ($F = 11.78$, $df = 1; 242$, $p < 0.01$) but no significant difference between Forms A and C ($F = 1.26$, $df = 1; 242$). The assumed interaction did not show up.

To summarize the results: indentation of key words makes reference work about 8% faster than the usual arrangement. This effect of indentation is about the same with familiar word shapes as with unfamiliar ones. Isolating the word shapes by underlining does not help. Unfamiliar word shapes (i.e., nonsense words) are recognized, on the average, about 17% slower than familiar words.

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Acknowledgment: We are very grateful to Monika Spohr and Ulrich Maske for running the experiment in the School of Fröndenberg-Stentrop, and to the headmasters and staff of this school for enabling them to do so, and to the Layout-Setzerei Karl H. Löding K.G. for providing the test material.