Visible Language

The research journal concerned with all that is involved in our being literate

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VISIBLE LANGUAGE

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Front cover: See Richard E. Wood's article on multilingualism on postage stamps which begins on page 30.

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The Distribution of Visual Information in the Vertical Dimension of Roman and Hebrew Letters

Joseph Shimron and *David Navon*

English and Hebrew native speakers read texts mutilated by removing a narrow or a wide strip at the top or at the bottom of the lines. Whereas reading the English texts was impaired more by mutilating the top, the reverse was found for the Hebrew texts. This result is ascribed to the different ways in which information is distributed along the vertical axis of Roman and Hebrew letters. Interactions between region and width of mutilation are argued to indicate that the effect is not due just to features at the very top and very bottom.

DIFFERENT PARTS of writing symbols may vary in their informativeness, i.e., in their contribution to letter differentation. A simple heuristic device for distinguishing between highly and poorly informative letter segments is to test how their removal would impair reading. As early as 1879 Javal (see Huey, 1908) noted that when an English text was presented in such a way that the lower half of each line was removed, readers could read it faster and more accurately than when the upper half was removed. Huey suggested that the part the removal of which the reader could withstand better contained probably less information. He concluded, thus, that the upper part of an English text is more informative than its lower part. Kolers (1969) used the same rationale to show that the right halves of Roman letters are on the average more informative than the left halves.

However, one could contend, as Javal did, that the upper part may have an inherent advantage. For example, perhaps people tend to attend more to the upper part of visual stimuli (see, e.g., Kimura, 1959), or at least to the upper part of Roman letters. In that case they may develop a habit to rely more on features at the upper part; they may be then less practiced with inferring the identity of letters from their lower features. One purpose of the experiment we report on was to establish that vertical position of a letter-segment is just a *correlate* of informativeness and has no effect of its own, whatever

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that may be, on reading. For this matter we hoped to find two alphabets with reversed relationship of informativeness and vertical position. Our intuitions and some informal studies led us to choose the Roman and Hebrew alphabets, because Hebrew letters seemed to be distinguished mainly by features at their bottom.

Another objective was to gain a better idea of where along the vertical dimension of the letter the source of the differential effect of mutilation resides. For this purpose we manipulated the width of the horizontal strip removed from the lines of text; if the same pattern recurs with the finer mutilation, part of the effect must be attributed to features located at the upper and lower margins of the letters. An interaction between the amount of mutilation and the region mutilated would indicate that marginal features are not the sole locus of the effect, and that features or feature-segments at the center do contribute to it.

Method

Eight native English speakers were asked to read aloud four different English passages printed in Berling type and mutilated in one of four different regions: (a) very bottom, (b) lower half,[1] (c) upper half, (d) very top (see Figures la, lb, lc, and ld, respectively). Eight native Hebrew speakers were asked to read aloud the translations of those four passages to Hebrew printed in Frank-Rihl type and mutilated in a similar manner (see Figures le, lf, lg, and lh, respectively). Pairing of passages and regions of mutilation as well as order of presentation were counterbalanced by means of a Graeco-Latin square design, so that each subject read four passages each mutilated in a different manner. Passages were mounted on 5 x 8-inch cards. To provide some context, the paragraph immediately preceding the passage in the book out of which the passages were taken was mounted in intact form on the back of the card. The subject started by reading the intact passage aloud, then turned the card over and started reading the mutilated passage aloud. Regressions and retroactive self-correction were discouraged. When a subject failed to decipher a word in 3-4 seconds, the experimenter signaled to skip it, and the word was counted as an omission. Reading was tape-recorded.

Time to read the mutilated passages and the number of omissions and substitution errors were recorded. For the analysis, both observations of reading-time and number of errors (omissions plus substitutions) were divided by the number of words in the passage.

Results

Three-way analyses of variance were performed on the two dependent variables: time per word and percentage of words incorrectly read (namely, omitted or substituted for).

As expected, the effect of the region of mutilation does interact with the language of the text; for reading time: $F_{(1,14)} = 95.81$; $p < .001$; for error probability: $F_{(1,14)} = 44.68$; $p < .001$. As can be seen in Figure 2, removal of segments from the upper half of an English line impairs reading more than removal of segments from the lower half ($F_{(1,14)} = 26.82$; $p < .001$, and $F_{(1,14)} = 37.78$; p. $< .001$, for time and errors respectively). But the reverse is true for the Hebrew texts ($F_{(1,14)} = 72.44$; $p < .001$ and $F_{(1,14)} = 10.93$; $p < .01$, for time and errors respectively).

The effect of mutilation is larger the wider the strip removed (For reading time: $F_{(1,14)} = 46.44$; $p < .001$; for errors: $F_{(1,14)} = 54.52$; $p < .001$). More specifically, the width of the removed strip affects error percentage in both languages: Error percentages across both languages are 7.6% and 27.3% for narrow and wide removed strip respectively; and there is no interaction between the effects of width and language ($F < 1$). However, the width factor affects reading speed of Hebrew texts more than it affects reading speed of English texts. The F ratio for the interaction between the effects of width and language is $F_{(1,14)} = 18.67$; the simple effect of width for just Hebrew texts is highly significant ($F_{(1,14)} = 62.02$; $p < .001$), whereas the corresponding simple effect for English texts is nonsignificant ($F_{(1,14)} = 3.11$; $p \sim .10$). A conceivable explanation is that in the Hebrew, widening the region deleted from the line creates a deficiency that may sometimes be compensated for by more thorough processing using probably some redundancies; in English, however, the similar factor tends to lead to erroneous reading of the words rather than to a rise in processing time.

The data suggest that the effects of the width factor are greater when the parts removed contain more information (namely, the more its removal impairs the two criteria of reading performance). Since information appears to be distributed differently in the two languages, an interaction of width and informativeness must be reflected in triple interactions.

These triple interactions were significant: For reading time: $F_{(1,14)} = 4.80$; $p < .05$; for errors: $F_{(1,14)} = 14.13$; $p < .005$. To make the picture even clearer, the data were collapsed across languages by the informativeness of the removed region and replotted in Figure 3.

1a

It is undoubtedly much easier for a young child to learn to play by himself or with other children than for a parent to learn to play with that young child. The parent needs to get off his adult high horse and get down to the child's level in play. This is not easy for many parents. We need to learn to play games with a young child to make up spontaneous games, to tell stories and read books to him. There is an art to all of these activities. They are learned skills.

1b

If you are quite honest with yourself, you will find that there are times when you will lose your temper, fly off the handle at your child, and yell at him or spank him, only to realize afterwards that what he did actually should not have elicited such a violent outburst from you. You were really mad at your husband or your neighbor. Or just cranky for some unknown reason. And you took it out on your child.

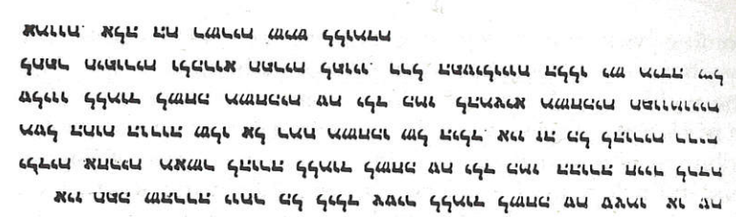
1c

Your preschooler will need to play with other children and learn these socializing skills during the ages of three, four, and five. Nursery school is an ideal place to learn them, because in nursery school the learning can be supervised by a trained teacher. In neighborhood play, the learning is hit or miss, trial and error. In neighborhood play, for example, there's no trained person to help a shy child integrate himself into a group and learn to build up his self-confidence and grow out of his shyness.

1d

When a child is three, he craves companionship in his play. He wants to separate from his mother and become more independent. The easiest way to help him to do this is to send him to a good nursery school. Even though a three-year-old wants to be separate from mother and get out into the world of his peers, he still has ambivalent feelings about leaving the security and protection of mother. It is only natural that he should feel this "separation anxiety," for mother has been "home base" for him for three solid years. Some children feel these separation anxieties more strongly than others.

1e



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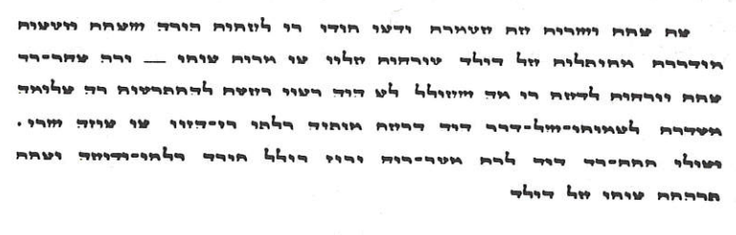

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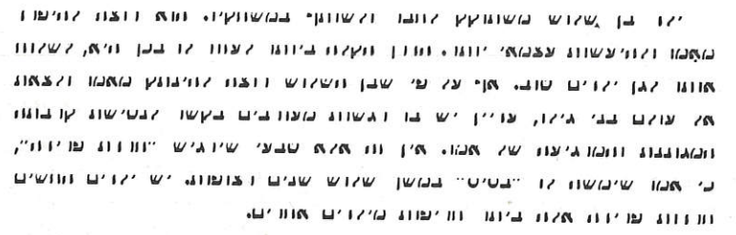

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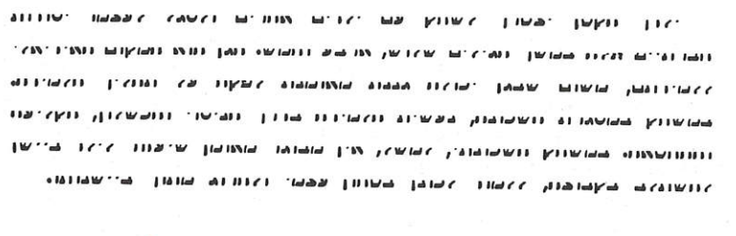

Figure 1. Examples of English and Hebrew texts mutilated in four different ways.

Coming back now to Figure 2, we can see that the difference between the top and the bottom of the line with regard to the effect of the width of the removed strip is more pronounced in English than in Hebrew. This seems to be due to the extremely asymmetric distribution of information along the vertical dimension of English letters. In English, there appears to be very little, if any, information in the bottom, as indicated by the very low number of errors (2%) committed when segments of the bottom part are removed. Consequently, it does not matter much whether the whole lower half is removed or just the very bottom (3.5 vs. 1.0 percent errors respectively). In Hebrew, however, removing segments of the less informa-

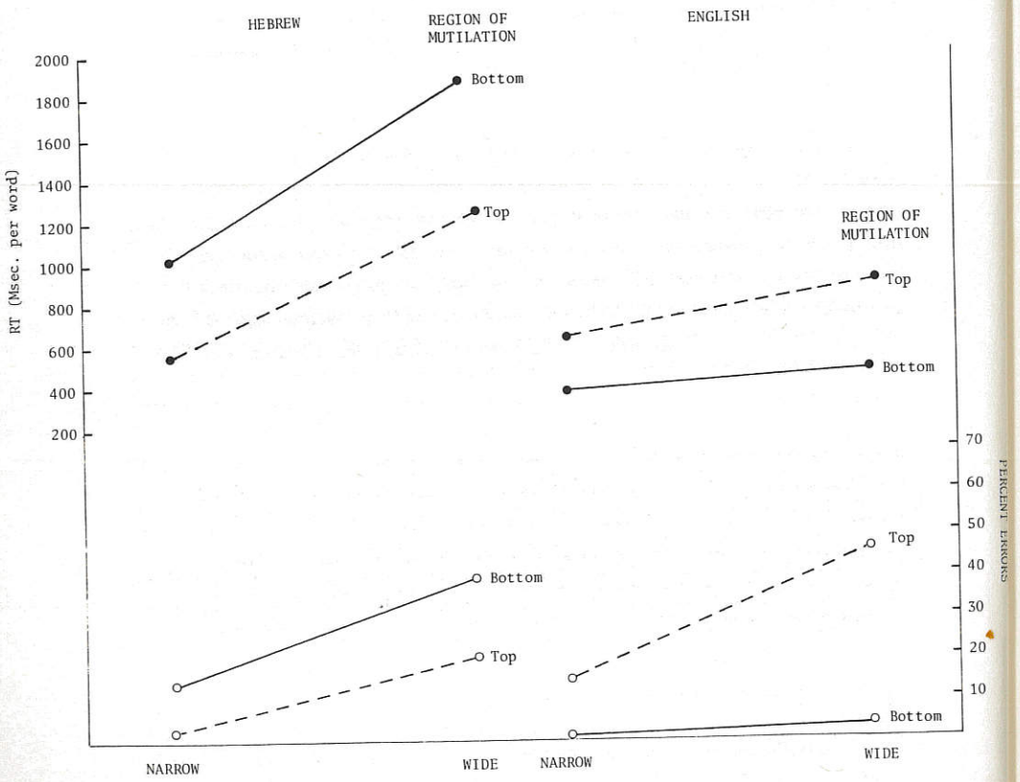

Figure 2. Mean reading times per word in msec (filled circles) and percentages of errors (empty circles) as a function of width of removed strips and region of mutilation (top-dashed lines; bottom-solid lines) plotted separately for English and Hebrew.

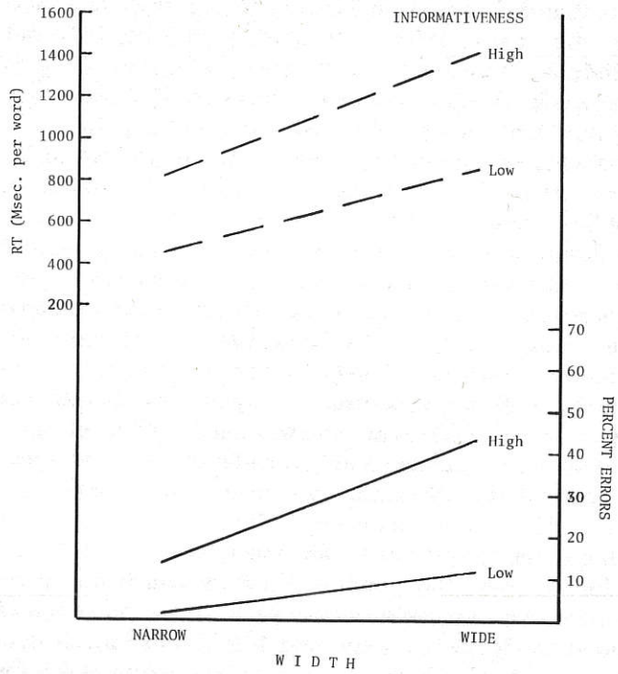

Figure 3. Mean reading times per word in msec (dashed lines) and percentages of errors (solid lines) as a function of width of removed strip and inferred degree of informativeness of the region of mutilation.

tive top half is still considerably harmful (11 percent errors on the average), so it makes a big difference whether the whole upper half is deleted or just the very top (20.3 vs. 2.6 percent errors respectively). Thus, in Hebrew the information contained in the upper half does not reside solely in the very top, but also in the more central region.

Discussion

The interaction found here between language and region of mutilation suggests that the differential effect of removal of the upper and lower halves of a line of text is due to the distribution of information or distinctive features along the vertical axis of letters. If it had been the case that attention was allocated unevenly along the

vertical axis or that the natural direction of visual processing was top-to-bottom, then native Hebrew speakers would probably not have been different in this respect. Thus the effect is most likely to be due to the alphabets rather than to their users. The effect may vary with the type font used but this just supports the point.

This conclusion is strengthened in view of the region-width interactions in Figure 2. If "completing" missing parts (or, inferring the identity of the whole from the partial sensory cues) in one direction suffers a disadvantage with respect to the other direction, that disadvantage should add to the disadvantage associated with the larger mutilation rather than interact with it. The most plausible account of this result seems to be that the distribution of informative segments along the vertical axis of letters is skewed, so that most of them are located at both upper quarters in English (and both lower ones in the Hebrew alphabet). Removing the margin of the informative half eliminates a considerable number of identity cues; but there are still a lot of cues in its more central part which are eliminated by a larger mutilation. That is not the case with the less informative half in which each quarter contains just a few cues.

Consider, for example, the number of letters which are made ambiguous when seen in isolation under each of the four ways of mutilation shown in Figure 1. We counted 4, 4, 9, and 8 lower-case Roman letters, and 11, 17, 11, and 8 Hebrew letters (out of 27) for mutilating the very bottom, lower half, upper half, and very top respectively. Of course, recognizability may suffer even when the letter is still unambiguous on thorough inspection. We presume, however, that the degree of recognizability of unambiguous mutilated letters under a given way of mutilation is not uncorrelated with the number of ambiguations it brings about. The empirical results reported here seem to support such a view.

1. Vertical size was defined as the height of lower-case letters. Thus the texts mutilated at the bottom had the extra advantage of showing a large part of the several upper-case letters which appeared in the passages.

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Figure/ground, Brightness Contrast, and Reading Disabilities

Olive Meares

Evidence is cited which indicates that the maximum brightness contrast of black-on-white print was a strong contributing factor in the reading disabilities of children attending a New Zealand reading clinic. Children's responses to questions and general comments about their perception of a printed page indicate a need for research into the figure/ground and brightness contrast organization of children's books. The ill-effects of maximum brightness contrast print could range from a minor irritation to a massive barrier to progress in learning to read.

TEACHERS HAVE long been aware that some children of average or above average intelligence have quite extraordinary difficulty in learning to read. There is no general agreement about the nature and causes of such difficulty. Vellutino (1977) has presented a fine overview of the extensive, inconclusive, and conflicting research which has developed in this complex area. The purpose of this paper is to ask researchers to consider a factor which does not seem to have received adequate attention: the print that children look at. In my own reading, I have found only four related references to print and its possible interference with reading:

1. Critchley (1964) speculates about the reasons why some "dyslexics" have a marked preference for small print.
2. Monroe and Rogers (1964) consider that children's complaints about print blurring and jumping are an indication of vision defect.
3. Bedwell and Grant consider that "bits of the print blur or disappear" because of the child's poor eye control. (From an account of their work in *National Education* [N.Z.], January 1978.)
4. In a checklist of faulty vision symptoms Jordan (1972) lists:

   Sees double images.
   Loses place when reading.
   Skips line above or below.
   Loses place when making return sweep to begin a new line.
   Words "spread apart."
   Letters or symbols appear to move about.

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Symbols "blink on and off."
Parts of words or symbols "come and go" during reading.

Jordan comments that disabled learners usually do not volunteer information about how they see; that they are unaware of their abnormal vision; that when such problems as those noted in the checklist are finally detected after years of struggling to read, the student frequently replies "no one ever asked me about it before"; that eye specialists do not specifically ask "Do things blink on and off when you look at a page?"; that such children often receive an eye specialist report: "This child has 20/20 vision. There is no visual problem." Jordan considers that there is an undetected visual defect responsible for the faulty vision symptoms itemised in his checklist. This paper offers a different hypothesis.

Experience working with children in a reading clinic tells me that blurring, moving, jumping, flickering print distortions are indeed a visual reality for many children. Their comments suggest that this is not the result of a vision defect, but rather that it is due to perceptual instability stemming from and induced by the conventional figure / ground organization of books i.e. black print on a white page.

A chance meeting (mid 1970) with the above figure and its accompanying caption—"Are you one of the few people who immediately recognize that this is the word FLY?"—triggered a chain of thought which led me to a long investigation of children's ideas about print. It seemed to me that the only people who would see FLY immediately were those who gave immediate attention to the white background. I decided to get clinic children's responses to this figure. If the response was "black shapes" (or similar comment) that would be that. If the response was "fly," a print probe would follow. I would record everything the children said, as they said it and in their exact words. No child would be aware that any other child was being questioned, so any similarity in response and discussion would be all the more striking and compelling.

All the children had three things in common:
Extreme reading disability
Average or above average intelligence,
All attended the same clinic which is part of the New Zealand state education system. Pre-admission assessments and IQ testing had been done by Education Department psychologists. Vision and hearing checks were arranged by them.

Part I. The Children's Responses

Some children responded to the black shapes:

Paula "Heck! A lot of funny black things." (no further questioning)

Michael "A broken-up triangle, a supermarket with a parking space, a funny sort of a house, the head of an arrow, and that one looks like an Eastern Island statue." (no further questioning)

The responses of other children were more interesting:

Ian (A non-reader on admission - average I.Q.) "Fly."
"Why could you see the word so quickly? It took me a long time to see it."
"Well, it's there." (He outlined the word with his finger).
"But that's in the white of the page. When I want to read a word, I look at the black marks. What about you?"
"Oh yes, I do too. But you've got to keep putting the white away. It stands out a lot."
"If this were printed the other way with white marks on a black paper, you'd have to look at the black to find fly. Do you think you'd find it as quickly?"
"No, because then I'd be looking at the white marks. White on black blends out. Black on white blends in."
"If you were a printer, how would you print books?"
"The other way round."
"Do you mean white words on a black page?"
"That would be better, but I'd rather not have any black or white at all. It's too dazzling."
"What would you have?"
"Just light words on a dark paper—not black. Light grey words on a dark grey paper would be good. You don't want too much difference between the words and the paper."

Robyn (A non-reader on admission, superior intelligence) "Fly."

"You read that very quickly. It took me quite a long time. I wonder why you were so quick?"

"Well, it's there; it's looking at you, so you just say it."

"Robyn, what do you think of the way books are printed? You know, black words on white paper."

"Oh it's silly! It's not fair! They make the covers so you can read them, and then you want to read the book and you can't because it 's all black and white and glaring. They know it gives you a headache but they don't care. People who design posters are clever. They want you to read what they say, so they print it so you *can* read it. But people know kids have got to read books at school, so they don't bother about the print—just for the cover. They make that good. It's not fair."

"Can you show me a book with a good cover?" Robyn indicated a book which had an off-white title on a mottled grey-blue background. (Later, other children commented on the readable book covers. They told me that new book covers are pretty to look at, but older book covers are better to read. Time and the soil of much handling has "greyed-down" the stark whiteness of the print).

"How would you print books, Robyn?"

"I'd have light, bright colours on a dark base. People like bright colours and light colours because you *have* to look. There shouldn't be any black and white together."

"Why not?"

"Because white glares at you and gives you a headache, and it makes your eyes water so you shouldn't have it. And you can't see black letters clearly so you shouldn't have them."

Nigel (A non-reader on admission. Low-average IQ) "Fly."

Nigel picked up the possible alternation of FLY and black shapes. We discussed this briefly, but I did not question him about print. Because of his general inarticulateness, I wrongly assumed that he would not have anything interesting to say.

Steven (Brother of Robyn. A non-reader on admission. Superior intelligence. Attended clinic 1966-68. The only ex-clinic child I questioned) "Fly."

"Now just look at the black shapes."

"What black shapes?" (He found them after a considerable lapse of time).

"Steven, why should you see fly immediately? I couldn't. For a long time all I could see was black shapes."

"You tend to disregard the white and concentrate on the black. It's easy for you to look at the black. I can *make* myself look at the black, but the white keeps coming through at me. It's natural for me to look at the light colour."

"Books are almost always printed with black words on white paper. What do you think of it?"

"It's rotten! When you try to read it, very black on very white comes out a muddy mess."

"How would you print books?'

"I'd have light coloured print on a dark background. It would stand out well. The words wouldn't blur."

"If you were printing light on dark, just what colours would you use?"

"It wouldn't really matter as long as it was light for the words and the least possible contrast between the colours. Light grey on dark grey would be good. Light green on dark green would be good too. A blackboard is good to read."

Peter (A non-reader on admission, average IQ) "Fly."

"That was quick. I had a lot of trouble finding that word."

"Gee, it's easy! *I* can read it."

"Peter, do you like the way books are printed? You know, black words on white paper."

He shook his head vigorously, but didn't speak. The head shaking was an answer so I asked, "Why not?"

"It's all the little white rivers. . . ." Then a flood of tears came.

That completed the first part of the investigation. For the next eight months, my out-of-school hours were largely devoted to wide reading, much thinking, and some writing. Two questions exercised my mind and guided my reading: First, had children's complaints about problems with print already been dealt with by researchers? At that time, I could find only Critchley's reference to small print being favoured by many dyslexics. Second, what did research tell us about children's print needs? The conclusion of Tinker (1963) and of many other researchers was that the maximum brightness contrast of black on white provides the most legible print.

University students were the subjects in Tinker's research which was directed at adult print needs. Children's needs are mentioned but in quite summary fashion. Tinker quoted research which shows that ocular motor patterns are stabilised by the end of fourth grade. "This suggests that children read enough like adults so typographical arrangements having optimal legibility for adults should also be

optimal for children who are about ten years of age or older" (p. 4). Younger children get even less attention from Tinker. "For the poor readers, and especially for children who are learning to read, illegible letters can be a real problem. . . . It may be concluded, therefore, that in children's books the individual letters should be as legible as possible. . . . In addition, the typeface should be larger than that used for adults" (p. 37).

Tinker does deal with irradiation—the encroachment of a white area upon an adjacent black area. This is responsible for the apparent "thinning" of black letters on a white ground. The serifs are the barriers which stem the encroachment of the white, maintain clarity of outline, and prevent thinning of the letters. This matter of thinning of black letters interested me greatly. I had corresponded with R.H.O. Northcote, a member of the New Zealand Road Signs Committee. He had told me that for night visibility, road signs had to be light on dark because black symbols would thin down; "In fact, they can disappear." Tinker's work explained this phenomenon and made clear that it is not restricted to night conditions.

The paramount thought in my mind was always, "What's in this for my children?" These children had made it clear that, for them, white has maximum interference qualities. They seem to be drawn to the white even against their wills. Remember Ian, "You've got to keep putting the white away." And Steven, "The white keeps coming through at me." And Robyn, "The white glares at you and you can't see black letters clearly." I wondered whether, for these particular children, the effects of irradiation are extreme, whether the serif barriers are inadequate to stem the encroaching white, and whether in extreme cases, the white encroachment might be so strong and the serif barriers so ineffectual that letters could actually disappear—even if only momentarily.

The principal of the school, knowing my interest in print, gave me a set of four booklets called *Write Away*. Each double-spread had a different figure / ground contrast, e.g., pink on grey, green on fawn, etc. I thought the children's reactions would be interesting and that it was time to probe for further information.

Part II.

Peter (Now about 11 years 3 months) Peter had made some progress in the intervening eight months and I thought it would be safe to try to get him talking about print. He was about to start a new book (7-year level). The print was very black, the paper was very white.

"My word Peter, this is good clear print. Do you like it?"

He tensed immediately. This time there were no tears but a torrent of words. "It's awful! There's all the little white streams running down the page and there's all blurry black in between them. Sometimes I have to shake my head three or four times before a word will come."

"Show me the streams."

"There they are—you can see them." He ran his finger down the page several times following different streams (the inter-word spacings stepping down from line to line).

"How would you like your books printed, Peter?"

"Lots of the book covers are good, but not white words, just kind of light words. Black words might be O.K. as long as there wasn't any white anywhere. The white gives you the streams."

On his next clinic day he sailed straight into the topic. "You remember when we were talking about the white streams?"

"Yes, I remember."

"Well, the dams don't make any difference when you're reading." He sat down and picked up his book. I felt overwhelmed; not just by the inexplicability of what he had said, but by the sudden certainty that *he did not know* that I do not share his experience.

"Where are the dams Peter?" (That surprised him. He described the construction and function of dams very clearly).

"Yes, I understand that."

"Well, there are the dams." He pointed to the large blocks of white at the paragraph ends. "They stop one lot of streams from flowing and they start the next lot off."

I was beginning to have some understanding of the dreadful reality that lies behind those words, "severe problems of visual perception."

Thinking of Peter's complaints about "the blurry black" I decided to attempt a little experiment which might provide information about my excessive irradiation/inadequate serifs conjecture. When Peter next arrived, I got him talking animatedly about a favourite topic, then interrupted him mid-sentence by saying loudly, urgently, and very quickly, "Peter! What do you see when you look at

a page?" As I spoke, I turned quickly and flicked a book open at a pre-marked place; no pictures, just black words and white paper. He was startled and turned to the book quickly. He seemed to catch the urgency of my voice and manner. He burst forth instantly with, "A white page and then all the white streams run and the blurry black comes in between."

On his next visit, Peter said, "Remember I said I see a white page and then the streams come and the blurry?"

"Yes, I remember."

"Well, I've been thinking about it. I don't know if I really do see a white page first. I don't think I do."

What had happened? Did reason tell him it could not be so? Did the memory of what he had said seem ridiculous? Did he actually see a white page for such a minute split second of time that deliberate reflection destroyed the memory? Or, for some obscure reason, did he just give a wrong answer which, by rare chance, happened to parallel my conjecture? I'll never know.

On this same day, I showed Peter the *Write Away* books with their appealing colour contrasts and greatly reduced brightness contrast. He was delighted with the colour combinations and, at one page, greatly excited. "Look! That's it! Done big! That's the kind of blurry I see!" I looked at the page. It had moved during the printing process and each word was double-printed. When his initial excitement had subsided, Peter took great care to make sure I understood that he does not see double. He made it clear that this doubling showed in exaggerated form, the blurredness that he experiences with black words on white paper. (His vision had been checked).

Nigel (The boy I hadn't questioned about print).

I gave Nigel the *Write Away* books to browse through and asked him to tell me what he thought of the various colour combinations. After some minutes, he said fervently, "Gee! These are great. Why don't we have our books printed like that?"

"Why do you like them so much, Nigel?"

"Because the words don't move."

I was so taken aback I couldn't think of anything to say except, "Do words *move?*"

He was decidedly cross. "Of course they do! Look at them! The white makes them move. And they move a lot worse if you stop to work out a word." Then, rather grumpily, he added, "Come on! Let's get on with our story."

On his next clinic day, Nigel had a question for me. "Don't the words move for you?"

"No Nigel, they don't."

"Oh—I was going to show you how to stop them moving." (Like Peter, Nigel had obviously thought I shared his experience).

"Well, I hope you *will* show me. It might help me to help some other child."

"It's quite easy. You just put a perspex sheet on the page. It's a lot better if you use a dirty one."

When the children write, the same book can be used by many children if they write with a Chinagraph pencil on a perspex sheet placed on the page. I had always known that the children love writing on these perspex sheets. I had assumed that they had high novelty value. I had thought, too, that the complete erasure of errors was probably appealing. I checked this matter after school using both a new perspex and a "dirty" one (the Chinagraph tends to rub into the fine scratch marks which perspex soon acquires). It seemed to me that Nigel was quite right. The perspex seemed to enhance the clarity of definition.

Mathew This lad had been at clinic a very short time. He just loved those perspex sheets. One day he commented:

"I wish our teacher had these at school."

"Why do you like them Mathew?"

" 'Cos they put the 'flecting back away."

"And what difference does that make?"

"Then the words don't jump."

About this time I read about the work of reading specialist Laurel Lynch. Miss Lynch tells how, as a special treat, she occasionally gives the children slates and slate pencils to use. She tells of the children's joy in using the slates. She attributes this joy to novelty and the permanent erasure of errors—parallel with my thinking about the perspex sheets. Nigel and Mathew had shown clearly that they had far more important reasons for liking the perspex. Could it be that Lynch's children had similar reasons for liking the slates? Would use of a slate tend to stabilise perception? A slate gives exactly what Ian and Steven said would be good print; a light grey figure on a dark grey ground. I bought two slates and a supply of pencils.

Peter was my first pupil next day. Instead of preparing his newsprint book before school, I used a slate. I shall never forget Peter's reaction to his "slate letter." He beamed and said very slowly, "That's lovely! You can read it so easy." I thought back to my early childhood. All my early writing efforts were on a slate. I remember

much blackboard reading. It is possible that there were hidden benefits in the very paucity of material in the schools of those days? Is it possible that some children were kept afloat who today would sink?

Remembering Critchley's assertion that many dyslexics have a marked preference for small print, I decided to switch Peter from 7-year books to 9 to 10-year books (the print is much smaller; indeed, it approximates adult print). This was a tremendous text difficulty leap and I was apprehensive. To our mutual delight, Peter handled this much more difficult material with greater ease than his previous simple book. I hoped he would comment on the small print. He did.

"I read this hard book a lot better than that old easy one."

"You certainly do. I've been wondering why."

"The print's a lot smaller."

"Come off it, Peter! That would make it harder, not easier."

"No! It's easier. When the print's small that makes a lot more words on the page and that makes a lot more black and that makes a lot less white and *that* makes it easier." He paused for breath and further thought. "It breaks it up and mixes it up."

If you look at a small print book and a large print book (given comparable paper and inking), you will see just what he means. The small print does away with the stark BLACK / WHITE. The "drawing-togetherness" of the small print gives the illusion of a greying of the whole page; an apparent reduction of brightness contrast.

I questioned Robyn who had long since left large print books behind. "Which would you rather read, Robyn, small print or big print?"

"Small print, of course!"

"Why?"

"Because the white doesn't glare at you so much and you can see the words better."

I questioned Martin (whose problems eventually defeated me utterly). "Martin, would you rather read big print books or small print books?"

He looked at me in silence for a moment, then said (and I wish I could reproduce the intensity of his voice), "Man! It's gotta be small if you gonna read it."

Steven This boy, who has already contributed to these pages, warrants a section all to himself. His intelligence is superior; his problems were extreme; his determination to succeed was quite exceptional, and the humiliation and misery of failure had eaten into him deeply. He had a strong inclination to read down, not across, a

page. When he was looking at print, he screwed his eyes up so tightly that he was peering through the merest slits, and he never blinked—never. His blinking at all other times seemed, as far as I could judge, normal. I asked for another vision check. The specialist reported no vision defects. He said to Steven, very bluntly, "Only one thing wrong with you, you're word blind."

Steven left clinic after three years reading well up to chronological age level. He left me a legacy of many unanswered questions. Years later, when this investigation was under way, I found a possible answer to every one of the following questions. Why had learning to read been such a mammoth task for this very clever boy? When he left clinic, Steven was a very good reader by anybody's standards and got much pleasure from reading, so why should reading still entail intense concentration? If the tightly slitted eyes were part and parcel of failure-induced tension (which seemed a reasonable surmise), why did not the glow and joy of achievement relax him sufficiently to open his eyes, or to afford him the relief of an occasional blink while reading? Once I came across a story which I knew Steven would find particularly pleasurable. The pages had almost missed the inking process. The words were discernible, but in a very faint light grey. When I apologised for suggesting a story with such poor print, he looked at me in wide-eyed surprise. "This is the best thing I've *ever* seen for reading." Why? Steven's silent reading rate was just as slow for exceedingly simple as for extremely complex material. Why? Why did he lose the place so frequently, omit lines, or begin to re-read a line already read? It is interesting but unhelpful to read that such behaviour is one of the many possible symptoms of dyslexia. That may be a fact, but it isn't an answer to the "why?" Why did he sometimes say that it would be much better if we printed words down the page instead of across? "You know, like the Chinese do." The only answer he could give to my "why?" was, "It would make reading much easier." But why?

My correspondent on the road signs committee sent me some unexpected material. He had had a paragraph typed on plain white paper. This paper was put through a machine which gave a reverse type copy; white words on a dark grey ground. I took these papers to Steven's home, sure that he would make some interesting comments. In relating what happened, I shall refer to the original as "conventional print" and to the copy as "reverse print."

Days passed. Then a third hole was found near the barn. The hole was new and not very deep. John felt sure it was Bozo's hole, and he was not wrong.

John soon learned that Bozo would dig only before anyone woke up. John was sorry that Bozo did not want to be seen at work.

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Steven (then over 15 years) looked at the two papers carefully, then laughed. Pointing to the reverse print he said "You wouldn't lose the place if you were reading this, would you?"

"Why not?"

"Well, the white words are their own white line. When you're looking at the white line, you're looking at the words, so you *wouldn't* lose your place. But when you're reading *this* [conventional print] you can't help looking at the white lines and when you make yourself go back to the black, you've lost the place."

"Do you remember when you were at clinic we used to have lots of trouble because you'd miss out lines or start to read the line you'd just finished? Can you tell me anything about that?"

"It wouldn't happen with this" (reverse print).

"Why not?"

"Well, the white words are their own white line and when you get to the end of a line, you just step down to the next one. But when you're reading *this* [conventional print] you're reading between the white lines and it's easy to get muddled when you move to the other side of the paper."

From this one can see that Steven's page presented quite a different picture from Peter's page. Peter's page had white streams (the inter-word spacings) flowing *down*. Steven's page had white lines (the inter-line spacings) going *across*. It was at this stage of the investigation that I realised I had at least tentative answers to all the "whys" Steven had posed.

Why had learning to read been such a mammoth task? His comments about print must surely indicate that this was a large part of his problem.

Why did he look at print through tightly slitted up eyes? Because this habit markedly reduced the amount of light entering his eyes, thus reducing the brightness contrast.

Why did Steven never blink when he was reading? A reasonable assumption would be that, having managed to suppress the white and fasten on to those elusive black symbols, he dare not blink for fear of losing them.

Why did he say that the very poorly printed page was "the best thing I've ever seen for reading?" Again—a reduction of brightness contrast.

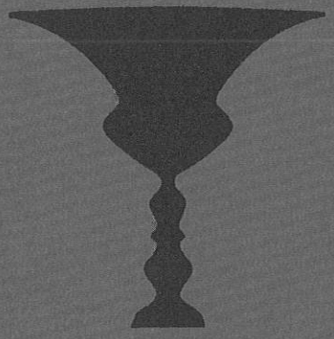
Why did he read very simple material just as slowly as very difficult material? Because very simple material was in large print and he was faced with stark, harsh BLACK / WHITE. Very difficult material was in small print which gives at least an illusion of brightness contrast reduction.

Why did reading still entail intense concentration at the time Steven left clinic? Black on white print demanded of him continuing intense effort to highlight the black symbols and to prevent the white from "coming through."

Why did he lose the place, omit or begin to re-read lines? He answered this question when he commented on the conventional print and reverse print material.

Why did he sometimes say it would be much better if we printed words *down* the page? By reading down the page Steven would cut out of direct vision those distracting horizontal white lines which, from his own account, drew him so compellingly. They would be in peripheral vision only.

Part III. Children's responses to a different reversible figure



This well-known reversible figure suggested further opportunities for eliciting interesting information from my children. The absence of language symbols appealed greatly. I felt that the children's responses would be less likely to be coloured by reaction to reading failure. I decided to reproduce the vase and profiles on a slate. On one side I used the slate pencil to reproduce the profiles, and on the second side, the vase. I then showed the children the book figure and both slate figures. Their comments are shown in the accompanying table.

NAME	BOOK FIGURE	SLATE PROFILES	SLATE VASE
Gordon	Experienced alternation. "They're coming and going and now I can't stop them."	"They don't come and go like they do in the book. I know why! The book's harder to focus than the slate."	Reported no alternation. "When I'm reading, when I stop to work out a word, when I look at it, it starts to come and go. If books were in slate colours, I don't think there'd be coming and going."
Anna	Experienced alternation.	Reported no alternation.	Reported no alternation. "You know, if print is too big you get moving backwards and forwards. It's not quite like that book, but it does move. I hate big print."
Nigel	Experienced alternation. "It's quicker than the coming and going when you stop in a book to work out a word."	Reported slight alternation. "But it's slow, not like that book—that's fast."	Reported slight alternation.
Phillip	Experienced alternation. "When you stop to work out a word it vibrates. The black and the white sort of flicker together. It's a bit like this book, but it's not exactly the same. It happens so quickly I don't know how to describe it."	"There's slow change. It's not strong."	"It's like the other side. It changes slowly. It isn't strong."
Robyn	Experienced alternation. "It flicks on and off like it does when you're reading. When you look at a page for a while the words come out and go back and go down."	"Isn't it good. It doesn't flick on and off. You just see the faces."	"It flicks on and off slowly. It's not strong. You mostly see the vase."

Other clinic children were shown the book figures and the slate figures. They all reported either no or minimal alternation on the reduced brightness contrast slate figures. However, they made no comments.

Part IV. Evidence from people who do not have reading problems

Following are two examples (from many gathered) of what seems to be print-induced perceptual distortion. One concerns a very young child; the other, a young adult.

Mary (aged 5½ years)

This child, in her few months at school, had made such remarkable reading progress that her teacher decided 7-year reading material would be appropriate. Knowing of my interest in print, she deliberately chose a book with unconventional figureground layout; brown print on a dark pink ground. The child enjoyed the story and told her teacher she liked the pretty pages "because the words don't wobble." When told that she had never mentioned wobbling words before, the little girl said she hadn't known there are words that *don't* wobble.

Christopher (aged 25 years)

This young man asked me if I would help him to increase his reading rate. When he told me that print tires his eyes, although he has excellent vision, I put a tinted perspex sheet over a page and asked him if he thought that would help speed up his reading. He said, "Fabulous! The negative images have gone!" I asked for a written explanation. Here it is: "For me reading requires great concentration. My first impression of a printed page is one of a shimmering blur. The shimmering is, in fact, white on black overlaid between the lines of the print—a negative image of the print."

Additional information from questioning showed that the negative image was under, slightly to the right of, and partly overlapping the line of print. This young man had never had reading problems, but had always been a very slow-paced reader. He had the same problem with reading music. (He is a member of a brass band and a past member of the New Zealand National Youth Orchestra.) This made him a poor sight-reader which he found infuriating. He decided to use sunglasses for all future reading. He had never spoken to anyone about this matter before because he did not know we do not all experience the same.

I think Christopher threw light on something which had long puzzled me. In response to the very general question, "Do you ever notice anything odd about print?" one of my clinic children said, "Well, there's all the funny little things in the white lines. They're a bit like little ducks swimming in a river." Did this child, too, experience negative images?

Christopher's prompt decision to use sunglasses interested me. I had made such a suggestion to children who complained of blurring, moving print, but the suggestion was not favoured; indeed, it seemed to embarrass them. Yet those same children accepted with alacrity the suggestion of a tinted perspex sheet clipped onto the book. Peter was the only child who gave an explanation. "If I wore sunglasses *you* wouldn't be able to get rid of the white. Anyway, I'd never use sunglasses. Everybody would think there's something wrong with me. When I use the coloured perspex, you can tell it's the book that's wrong." Over the last six years, many children have used that tinted perspex, and it is still in use today. As reading improves some of the children use it less and less and finally discard it, usually when they move on to smaller print. Others cling to it as to a lifeline. My children's comments convince me that print—which is an observable, manipulable, external condition—deserves our close attention. I think these children's task (and ours) is made unnecessarily difficult by maximum brightness contrast print. For me, the outcome of all this reading, writing, thinking, talking, and above all, *listening* is the conviction that these children know what they are talking about.

This paper is really a plea from children. I hope researchers will respond with answers to the questions it raises. And a concluding question: Where else in the child's world does he meet, let alone be required to attend closely to, such an extreme brightness contrast as on the pages of a book?

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Visible Language Policy—Bilingualism and Multilingualism on Postage Stamps

Richard E. Wood

The postage stamp is a highly visible, internationally circulated symbol of national identity. Since its beginnings in the 1840s it has also been a symbol of language policy. Stamps of countries on all continents reflect official bilingualism: the two most striking, carefully observed contemporary instances, Belgium and Canada, both show a slow, painful historical movement from original monolingualism to today's scrupulous bilingualism. In Third World nations, language identity has sometimes changed, sometimes remained unchanged since independence. Minority languages have increasingly been represented on postage stamps. Languages of wider communication, chiefly English and French, are used by some countries, avoided by others. Others seek a politically neutral language in Latin or Esperanto. Postage stamps are testimony to language change, language policy, and language reform. In them, language policy is visible.

THE POSTAGE STAMP is a highly visible symbol of national identity and sovereignty. Since the introduction of the adhesive postage stamp by Great Britain in 1840, the number of states issuing them has grown constantly. The only attempted abolition of the postage stamp was under the Pol Pot régime of Kampuchea in 1978, when they were eliminated along with money, and probably along with a formal postal service. But even there, shortly before its overthrow, the Pol Pot government modified its decision and announced that it would, after all, issue stamps (with figures of value expressed in a non-existent currency), but not for postage—only for sale to foreign collectors. This forthright statement, which simply recognized an established fact for many Third-World and other nations, that many of their most attractive stamps were printed in metropolitan countries for sale to collectors there, and in some cases not placed on sale in their nominal countries of origin—placed philatelists in a quandary, which was soon resolved by the demise of the Pol Pot government.

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0022-2224/80/0100-0030$02.00/0

Neither the world's first postage stamp issuing country, nor the second, Brazil, thought it necessary to identify its postal issues by including the country name. Great Britain omitted its name because it was the only stamp-issuing country at the time. The British identity of the Penny Black was clear enough thanks to the head of Queen Victoria. The only wording required was "One Penny." Brazil, in 1843, saw no need for any wording whatsoever, an oval design distinctive from that of the rectangular, slightly vertical British issue, and a figure of value, sufficed. Other early countries such as Belgium, likewise, did not identify themselves by name. The inscription "U S Post Office" on the first American issue and "Emp: [Empire] Français" on that of France, in 1847 and 1848 respectively, established a principle which continues to the present day; except that Great Britain, under a "grandfather clause" which it itself created, deems the head of the reigning monarch sufficient identification. All other countries and colonies must identify their stamps in words to prove, as it were, that their stamps are *not* British. Moreover, under the regulations of the Universal Postal Union (established in Berne in 1874 and thus the oldest specialized agency of the United Nations) such identification must be made in the Latin alphabet—a notable example of international linguistic discrimination on an Eurocentric basis.

The UPU became concerned about the number of countries not adhering to this regulation in the mid-1960s; as a result, two of the leading countries using non-Latin alphabets, Greece and Japan, began to place a Latin-alphabet transliteration of their name on all stamp issues, beginning in 1966. For Greece, this was the traditional "Hellas" (Figure 1), although the *h* is, in fact, phonetically absent; for Japan, too, it was the well-known "Nippon" rather than the more commonly heard *Nihon*. At that time, too, Yugoslavia dropped its earlier even-handed policy of roughly alternating the use of the Cyrillic alphabet (used by its majority Serbian population and others) and the Latin (used by the Croats and Slovenes) in favor of the country name "Jugoslavija" always in the Latin alphabet (Figure 2), even when the stamp commemorates a Cyrillic-using republic of the country (in this case, a historic peasant uprising in Macedonia). The chief country not heeding the UPU's rule is now the Soviet Union, which continues to use only the Cyrillic "CCCP" for USSR.

Policy on the stamps of Third World countries varies widely. Those with well-established, traditional indigenous cultures not subject to the historical influx of the languages of colonial powers tend to maximize their national language on stamps while adhering to

UPU regulations with a word, or a few letters, in English or French. This is notably true in Saudi Arabia, whose cryptic inscription "K.S.A." (for Kingdom of Saudi Arabia) might leave the unitiated none the wiser (Figure 3). A similar policy applies in Libya and will probably now be implemented in Iran. Some Third World countries, on the other hand, continue to show the linguistic consequences of neo-colonialism. They tend to be ruled by a neo-colonial elite who are linguistically alienated from the mass of the population. This applies to much of traditionally anglophone and francophone Africa, but there are signs of change there. Madagascar, for example, whose stamps read "République Malgache" in French until 1961, is now "Repoblika Malagasy" in Malagasy. Commemorative and functional inscriptions on its stamps continued in French until the mid-1970s, but are now also in Malagasy.

An interestingly dual language policy appears on a stamp of Senegal issued in 1977 for the tenth anniversary of the International Council of the French Language (Figure 4). The distinguished poet of negritude, President Léopold Sédar Senghor of Senegal (along with President Habib Bourguiba of Tunisia) is one of the two chief initiators of the Council and a pillar of Francophonie in Africa. But other languages of Senegal are recognized for the first time on that stamp (Figure 4)—French is placed alongside Wolof, Seereer, Pulaar, Joola, Mandinka, and Soninke.

An African counterpart to Canada is the United Republic of Cameroon. Its stamp (Figure 5) issued for the same event in 1977 shows the official bilingualism in French and English of this country, 99 percent of whose population speak neither European language natively. Cameroon is composed of a majority of ex-French territory and a minority of ex-British. The de facto dominance of French is indicated, firstly, in the superior placement of the country name in that language; secondly, in the functional inscription "Poste aérienne" solely in French; thirdly, in the denomination, expressed in (Cameroonian) francs; fourthly, in the fact that the stamp was designed and printed in France as part of a uniform series also issued by the Ivory Coast, Chad, etc.; and finally, by the very topic selected—the International Council of the French Language, headquartered in the lovely Château de Sassenage, France. The same motif and a similar bilingualism are found on a stamp of Tunisia (Figure 6). One of the dozens of whimsical stamp designs produced by the internationally known Tunisian stamp designer and engraver, Hatem Elmekki, it is immediately recognizable as an Elmekki product, and it attests to the continuing strength of the French language in Tunisia and in North Africa generally. Algeria, whose historical

Figures opposite

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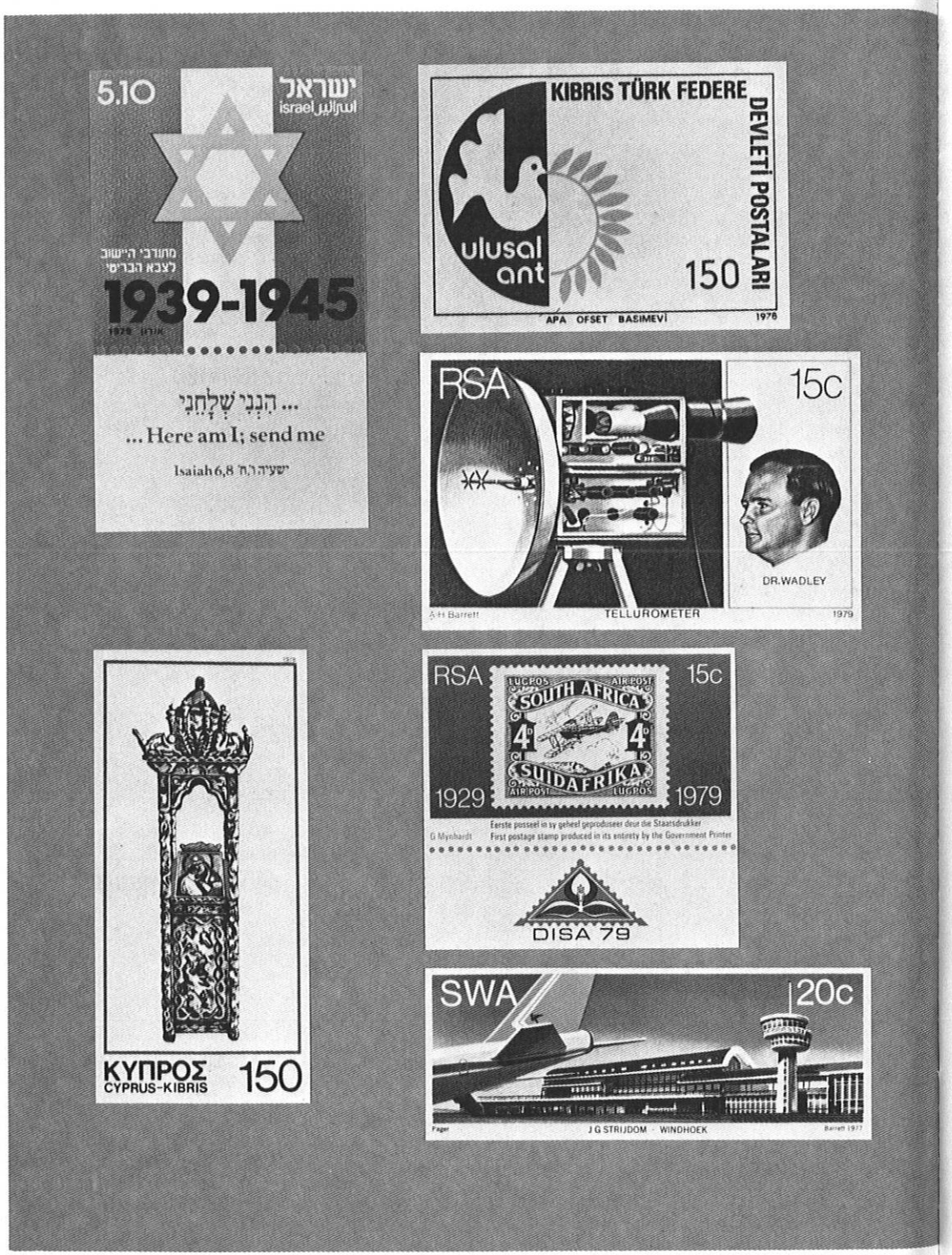
3 6



experience with France is more bitter than that of Tunisia, does not emphasize its ideological adherence to Francophonie,[1] and did not issue a stamp for the Council's anniversary.

Elsewhere in the Mediterranean world, the language policy of Israel is exemplified by a recent stamp issue (Figure 7). The country name, Israel, appears in the two official languages, Hebrew and Arabic, but the commemorative inscription is in Hebrew only. The first instance of the use of a word other than the bare minimum, Israel, in the Arabic language on an Israeli stamp was in 1970, when the Great Synagogue of Tunis was depicted and labeled; the second was in 1972, when the demand "Let my people go" was carried on an Israeli stamp in Hebrew, Arabic, Russian, and English; and most recently, the Arabic term for "pacification, peace-making" appeared on a 1979 issue commemorating the Egyptian-Israeli treaties, alongside "shalom" and "peace."

Space on Israeli stamps is limited, *inter alia,* by the need to indicate the country name in three languages. From Israel's first stamp issue in 1948, then, additional information has been carried on a tab, attached generally below, at times beside, the stamps at the sheet bottom (or edge). These tabs are found inscribed in Hebrew only, in Hebrew and French, or in Hebrew and English (Figure 7). Since 1965, English rather than French has been consistently used.

Also in the Mediterranean, the divided island of Cyprus offers us, not unexpectedly, a divided linguistic policy. Until the independence of Cyprus in 1960, all stamps were inscribed in English, the language of the colonial power, only. Independence saw a different policy, the elimination of the ex-colonial language on the first issue of the Republic; their inscription Republic of Cyprus was in Greek (above, or on the left) and Turkish only. But this policy was reversed, and the role of English as a neutral, intercommunal language was recognized in 1962, when Greek "Kipros" and Turkish "Kibris" appeared in large letters; "Cyprus" reappearing in somewhat smaller type.

As intercommunal relations in the new state worsened and the Turkish Cypriots were alienated from the central government, a new policy was adopted in 1965. The Greek "Kipros" was placed first, in large letters, the English (no longer Turkish) "Cyprus" second, and finally the Turkish "Kibris." This remains the policy of the Nicosia administration today (Figure 8). Meanwhile, in 1973 Turkish forces invaded and occupied the northeastern part of the island and a Turkish Cypriot Federated State was established. Its stamps are inscribed in Turkish only (and printed in Turkey, just as those of the Nicosia government are printed in Greece and appear similar to

Figures opposite
7 9
10
8 11
12

Greek stamps), making no attempt to cater to the Greek- or English-using population (Figure 9).

Several thousand miles to the south, language policy is also applied in a multi-national, multi-ethnic country, South Africa. When the Union of South Africa was established, on May 31, 1910, its official languages were English and Dutch, and the first stamp was inscribed "Unie van Zuid-Afrika," with the distinctive Z which is found in Dutch, but not Afrikaans, and which gave South Africa its continuing international identification mark for motor vehicles, ZA. Dutch had, in fact, long since ceased to be spoken at the Cape, and by 1926, "Zuid-Afrika" yielded to the Afrikaans "Suid-Afrika." Upon the proclamation of a republic, on May 31, 1961, the rather lengthy bilingual inscription "Republic of South Africa/Republiek van Suid-Afrika" in alternating orders was placed on all postage stamps. From 1967, however, this complexity was eliminated and the abbreviation "RSA" common to both languages was adopted.

Through the use of abbreviations and symbols, bilingual inscriptions can be eliminated on many South African stamps. A good example is Figure 10, where the Latinism "tellurometer" is shared by English and Afrikaans; the abbreviation "c" stands for cents to the Anglophone, cent to the Afrikaner, and the title "Dr." stands for doctor and dokter respectively. The stamp in Figure 11, falling in the collectors' thematic (topical) category of stamps-on-stamps, depicts South African bilingualism old and new.[2]

Neighboring South-West Africa, now known internationally as Namibia, for many years adopted the same bilingual policy as South Africa. Its first stamps, overprints on those of the Union in 1923, were inscribed in English and Dutch, and Dutch yielded to Afrikaans in 1926 as it did in South Africa. But in 1965, in a surprise move, German, the language of the former colonial power, was also recognized, and some trilingual commemorative inscriptions began, although the country name remained in English and Afrikaans only. The abbreviation "SWA"—which handily fits South-West Africa, Suidwes-Afrika, and the German Südwestafrika—was adopted in 1968 and is shown in Figure 12. There as elsewhere a trilingual inscription is avoided by cryptic wording. The stamp depicts the J. G. Strijdom Airport (in Afrikaans, Lughawe, in German, Flughafen), Windhoek; but none of the three words is used; rather, "J. G. Strijdom" alone appears, and the fact that it is an airport must be gathered from the picture. When universal suffrage was introduced in South-West Africa in 1978, the definitive (regular) stamp issues, with their linguistically neutral inscriptions, were given overprints,

one stamp out of three being overprinted in English, German, or Afrikaans, respectively. The results, and the even-handed policy followed in alternating the languages, are shown in Figure 13.

Moving from Africa to Asia, we note the bilingualism of a British colony, Hong Kong. Most issues of British colonies are inscribed in English only—certainly, not a word of Spanish has appeared on a stamp of Gibraltar—but Hong Kong has always had bilingual stamps since its first issue of 1862. This is in contrast with the issues of British India, which were in English only until independence. Note that the Queen is represented, not by her head but by the royal monogram, the crown, and "E II R" (Elizabetha Secunda Regina) (Figure 14).

The Republic of Korea identifies itself in Korean and English (Figure 15) and, like Israel, provides additional information bilingually on the sheet edge.

A different kind of bilingualism is found in a politically unique entity, the Condominium of the New Hebrides in the South Pacific. Here British and French Residents exercise equal power, and foreigners arriving in the islands must declare whether, in the event of an infraction of the laws, they wish to be judged under British or French law. There are not really two postal services in the New Hebrides, a British and a French, but the dual condominial status of the islands is reflected in the issuance since 1908 of parallel sets of postage stamps inscribed in French and in English. In the French-language issues, out of courtesy, the British royal monogram is placed in the top left corner of most, though not all, stamps; while the British stamp printers generally, though not always, give similar precedence to the "RF" and fasces of the French Republic. In Figure 16 it will be noted that the original title of the painting by Albrecht Dürer remains in German. Among the many fascinating features of the stamps of the New Hebrides are the facts that, while the rest of the world had left the Gold Standard in the 1930s, the stamps of the Condominium continued to be inscribed in gold centimes or gold francs until July 1, 1977; and also that some English-language issues, prepared and printed at the Atelier des Timbres-poste in Paris, are inscribed in a French-influenced English. Thus, on a stamp issued in 1974 to commemorate the opening of the new post office at Vila, the capital, we read "Ancient Post Office" for what should obviously be Old Post Office or Former Post Office but was influenced by the French *Ancien bureau de poste.*

The largest land mass of dependent territory so recognized by the United Nations Committee on Dependent Territories is neither a

British nor a French possession but the island of Greenland, presently administered as a county of Denmark. Its stamps illustrate not only bilingualism but also linguistic reform.

The first issues of Greenland in 1905 were inscribed in Danish only, "Grønland." But in 1964 the name "Kalâtdlit Nunât" in the Greenlandic language, a standardized variety of Eastern Eskimo (known in Canada as Inuktitut) was used on an issue commemorating the Greenlandic philologist and codifier of the language, Samuel Kleinschmidt. The name did not reappear until 1969, but it then took pride of place above "Grønland" (Figure 17). However, in 1978 a linguistic reform was implemented—the spatial variety upon which standard Greenlandic was based was changed, and the circumflex on â, not available on the Danish (or English) typewriters most commonly distributed in Greenland, was replaced by aa. The country's name now reads "Kalaallit Nunaat" (Figure 18).[3]

Language reform is illustrated on a strikingly simple poster-type design from Turkey of 1978 (Figure 19). It was issued for the fiftieth anniversary of Kemal Atatürk's linguistic reform of 1928 in which the Arabic alphabet for Turkish (and all other non-Latin alphabets for languages spoken in Turkey) was abolished and replaced by Latin. The receding Arabic "alef, beth, gimel, dalet" yield to the emergent "ABC." As on other modern Turkish stamps, the name of the country is expressed as "Türkiye Cumhuriyeti" (Republic of Turkey) the latter word being a historic borrowing from Arabic *gumhuriya* but written, of course, like all other Turkish words in Latin script. This commemorative stamp is, in fact, the second to carry Arabic script since the 1928 reform, the other being a commemorative inscription for a state visit by the King of Saudi Arabia.

Continuing on the subject of language reform, Norway offers a case study of a reform which has been only partially implemented. The country continues to use two closely kindred, mutually intelligible, but politically and culturally differentiated standard languages. The majority language—used for all standard purposes by over eighty percent of the population, including those in Oslo and the other major cities—is officially Bokmål (literally "book language"). This is an arbitrary, rather misleading term since it is also the spoken daily language of the upper and middle classes in the capital and several other cities, of most telecommunications media, etc. Some of its users prèfer the formerly official term Riksmål ("state language") which correctly, if invidiously, points out that it is the customary language of the royal family and other leading circles. As in other media, Bokmål is dominant on the stamps of Norway; every stamp

Figures opposite
13 16
14 17
15 18

inscribed "Norge"—the overwhelming majority—is inscribed in Bokmål, and all stamps were so inscribed until 1951 (cf. Figure 20).

In 1951 eyebrows were raised among philatelists worldwide when a series of Norwegian stamps appeared inscribed not Norge but "Noreg." Letters had been reversed in error on stamps of other countries (e.g., the famous "potsage" for postage error on a peculiarly primitive-looking stamp issue of Tibet) and had become valuable rarities. The Norwegian post office, however, explained that in this case the stamp commemorated Arne Garborg, a poet and folklorist of the nineteenth century, who was among the initiators of the Nynorsk alternative standard language of that country. He and his followers preferred the variant "Noreg," and several commemorative issues since then, memorializing Nynorsk poets and writers, have borne that legend. A further step toward the public visibility of Nynorsk was taken in 1977 with the issuance of the first stamp on a general topic (rather than for an individual user of Nynorsk), a fishing-industry series with the "Noreg" wording (Figure 21).[4]

Sharing a common border with Norway is another legally bilingual nation, Finland, where, as in Norway, there is an imbalance between the two languages. Swedish, once the sole official language, is now spoken natively by a declining proportion of around six percent of the population, while Finnish, a Finno-Ugric language, is gaining throughout the territory of Finland, even in areas which were hitherto monolingually Swedish or nearly so.[5] The two languages are simply presented in Figure 22: "Suomi" (Land of a Thousand Lakes) is the Finnish name, while "Finland," which happens to be identical to the English name, is in fact Swedish.

Although a Bible translation into Finnish was made by the Renaissance figure, Mikael Agricola (Father of the Finnish Language), the language remained in eclipse and overshadowed by Swedish—the language of the nobility, landed gentry, and many of the emerging middle classes—until the political separation from Sweden in 1807. The Finnish national movement, raising Finnish to the level of a standard, all-purpose language, dominated the nineteenth century; one of its earlier figures was the preacher Paavo Ruotsalainen whose name, perhaps paradoxically, means "Paul the Swede" (*Ruotsi* in Finnish is Sweden; *Ruotsalainen* is an adjectival derivative). The Gothic script (German Fraktur) characteristic of the period and genre is used effectively on the stamp in Figure 23.

Finland has yet to establish a unitary policy on the use of a language of wider communication on those of its stamps designed to

Figures opposite
19 22
20 23
21 24

be recognized and understood by a worldwide audience. Latin has been used on some, French on others, and in Figure 24 we note the use of English. We will be struck by the total divergence of the Finnish text from Indo-European vocabulary, but two out of the three Swedish words seem familiar, and the first one, "barnets" (of the child, the child's) is clear to those who know the Scots word *bairn*.

Switzerland, too, on occasion uses English as a common language for the sake of neutrality between its three official (and four recognized national) languages. Figure 25 depicts one such use in connection with the inauguration of the transnational airport serving the metropolitan area straddling the Franco-Swiss political border. The use of the English inscription "Airport Basel-Mulhouse" was doubtless prompted by the recognized status of English as the language of aeronautical communication. It also served to eliminate the linguistic and political complexity of a bilingual inscription, in French presumably *Aéroport Bâle-Mulhouse* and in German *Flughafen Basel-Mühlhausen*. In fact, both sides of the Rhine at this point speak the same Alemannic language variety. It will be noted that this and all other Swiss stamps bear the country name "Helvetia" in Latin, taken from a Celtic tribe who inhabited the territory of present-day Switzerland in the days of Tacitus.

A third non-official language is found on a stamp of 1979; it is Esperanto, more neutral than English, and more modern than Latin (Figure 26). Figure 27 will remind us that most Swiss stamps, especially the definitive issues and those not commemorating a sectional or local event in one or other of the language areas, are inscribed *only* in Latin, to the satisfaction of all parties. Latin, too, gave Switzerland its familiar international car registration mark, CH for Confœderatio Helvetica, a more complete, official name which was featured on stamps of Switzerland only during the years of World War II when its national identity was both strengthened and threatened by the surrounding Axis or Axis-occupied states. The stamp in Figure 28 once again is another linguistic amalgam: the Latin "Helvetia," the English-derived, now internationally standardized road warning "Stop!" and the word in the three official languages: "blind" (German, coincidentally identical with the English despite 2000 years of separate development on both sides of the North Sea), "aveugle" (French) and "cieco" (Italian). The distinctly German name of designer "Jürg Mauerhofer" is featured in the lower margin to the left in accordance with standard practice on most European and some non-European stamp designs, and the

Figures opposite
25 26
27 28
29 30

classically French name of the printer, "Courvoisier, S.A." (Société Anonyme, i.e., Inc.), to the right. The use of "Stop" reminds us that while in most other countries, including France and French-speaking Switzerland, Stop signs have been, or are being, introduced, they are at present being eliminated in the Province of Québec, where the formerly bilingual signs Arrêt—Stop are now being reworded as Arrêt only, after decades of public controversy and etymological debate.

Mention of Québec brings us to Canada, where language policy at the federal level has traveled painfully from unilingualism in English, throughout the nineteenth century, to a current bilingualism which, in some cases, appears to favor French. The first stamps of the Province of Canada in 1851 were unilingually English and remained so throughout the reign of Queen Victoria; indeed, several stamp issues did not even aid the French Canadian with a neutral figure of value. No, they were inscribed only in English words: "half cent," "five dollars," etc.; this was the case for the Victoria Jubilee issue, 1837-1897. In 1908, however, French appeared for the first time, not in balanced bilingualism but with French-only commemorative inscriptions for the "III^{e} Centenaire de Québec" while the functional inscriptions, e.g., "Canada Postage half cent," remained in English only. After this short-lived commemorative, French again disappeared as a visible language to return on the 60th anniversary of Confederation issue of 1927 with side-panels reading "Postes—post," amended in 1930 to "Postes—postage" and carried, generally in that order, on almost all Canadian stamps since then.

National events continued to be commemorated chiefly in English. In 1932 we find "Ottawa Conference"; in 1933, "World's Grain Exhibition & Conference, Regina." The last stamp with a significant inscription in English only is Figure 29, commemorating the visit to Canada of "Their Royal Highnesses the Princess Elizabeth, Duchess of Edinburgh, and the Duke of Edinburgh." Thereafter, inscriptions are strictly bilingual and there is an attempt to render everything in a fully bilingual manner even when the words are closely similar or identical in both languages (Figure 30). The stamp in Figure 31 is one of the few to place the English "postage" above French "postes."

It should be mentioned in passing that the great majority of countries have eliminated the word postage from their stamp designs, considering it self-evident. It is retained in Canada, no doubt, as a symbol of *visible* bilingualism; often the only one, as the language problem has encouraged the use of alingual symbolism on Canadian stamps.

The current Canadian domestic postage rate on a first-class letter is 17 cents (Figure 32). It will be noted that, unlike the U.S. or South Africa, Canada no longer uses the symbol ¢ or c after the figure of value; it must simply be inferred that, even in these inflationary days, the denomination is expressed in cents and not in dollars. This elimination of the c or ¢ (both had been used) occurred in 1962 and was, once again, the result of an Anglo-French linguistic difference, in this case one of dubious linguistic validity. Some Francophones contended that the correct French equivalent for English cent was sou, and that the abbreviation should therefore be s, or that there was no standard French abbreviation. This assertion is doubtful. Sou is, of course, an old, long-obsolete French coin once equivalent to five centimes. Its memory lingers on in Québec, as in France, in much the same way as the recollection of the Sterling penny remains among the descendants of the people of the former British colonies of North America. But just as the word penny is a colloquialism, not found on coinage or in formal usage, so sou is not a standard, contemporary French equivalent for cent; on the contrary, cent, identical to English, is standard French.[6]

In the eyes of many observers, the country most similar to Canada in the historical confrontation of two ethnolinguistic groups with a territorial base and different historic and cultural self-images, is Belgium. Both countries arose as geopolitical unwilling unions or makeshift alliances of conflicting self-interests in the nineteenth century. In both, a hitherto socio-economically and politically subject self-perceived minority has carved out a political territory in which it can be *maître chez soi* (master in its own house), and in both the linguistic character of the nation's metropolis, in which the two ethnolinguistic groups co-exist uneasily, is a point bitterly disputed by both sides. Unlike Canada, however, Belgium, when first established in 1830, was officially unilingually French, and its first stamps shortly thereafter were likewise in French only. Then, *mutatis mutandis,* replacing French by Dutch the Flemish minority fought for and gradually attained its right to linguistic visibility.

The first inscriptions in Dutch (then referred to in Belgium as Flemish) appeared in the 1880s (a little before French in Canada, as shown above). But the order of the country name was still conventionally "Belgique—België," in French then Dutch. The interwar period brought a more equitable alternation of languages, but French still had the upper hand, generally coming first, for example, on the top value of a multi-value stamp series.

The German occupation during World War II brought an administration determined to discredit the francophone upper classes and to favor the Germanic-speaking Flemish *volk,* though anti-German resistance was strong on both sides, while the leading pro-Nazi political figure, the Rexist Léon Degrelle, was a francophone. On stamps issued during World War II Dutch inscriptions are often found to the left of those in French, and the Dutch-first stamp might well be the top denomination in a multi-value series. After World War II there was some regression. Thus, in 1952, a stamp commemorating a happening in the Flemish part of the country, an exhibition on Charles V in Ghent, was still inscribed "Belgique—België" rather than the reverse, and the French commemorative inscription was still uppermost. This would be unthinkable today.

Today, events in the unilingually Dutch-speaking part of the country normally have a unilingual commemorative inscription in Dutch (Figure 33), and the bilingual country name on such stamps is in the order Dutch—French. For events and figures in the francophone territory, of course, the procedure is reversed. Figure 34, for example, shows a French-first inscription for the francophone "Centre d'action laïque." The historic character who is depicted—Till Eulenspiegel, as he is generally known in English under a German name, or Tijl Uilenspiegel in Dutch, was indubitably a Flemish-speaker, and is indeed regarded today as a symbol of the Flemish folk character. But as the Action laïque is a francophone organization, his name is given in its French form "Thyl Uylenspiegel" first (in the left margin).

National events, concerning the whole country, are commemorated bilingually, preferably in *se-tenant* pairs (the French-derived term, used in English, refers to two stamps of different design, printed together in the sheet) (Figure 35). Others, commemorated on a single stamp, have to choose which language to place first (Figure 36); the following stamp issue of Belgium will then select the other language for precedence.[7]

The above study has focused on the stamp issues of individual countries and dependent territories. Let us close with a brief sketch of language policy on the postal issues of the United Nations. The first UN stamps were released in 1951, for use only at UN headquarters in New York. Most values of the definitive series bore the name United Nations in all five official languages of the period, Chinese, English, French, Russian, and Spanish. However, the 2¢ and $1 denominations carried the name United Nations in Chinese, Russian and Spanish only, while the other two official languages, English and French, were used for an additional inscription, "Peace-

Figures opposite
31 34
32 35
33 36

Justice-Security," but not for the UN name (Figure 37). The 20¢ value bore the name United Nations in French and Spanish only.

Full linguistic equality, then, was not entirely observed on the first New York UN issue. Selectivity among the official languages has continued to the present, and is indeed a growing tendency. The first commemorative issue of the UN, for example, while it identified the organization in all five official languages, provided the commemorative inscription, "San Francisco 1945. Birthplace of the Charter" in English only. Since then, a gradually diminishing number of UN New York issues have borne a commemorative inscription in five languages: one such is shown in Figure 38, and dates from 1957. The San Francisco commemorative established a precedent of selecting one or two of the official UN languages for use as "appropriate" to a particular topic. Thus, Figure 39 shows the use of Spanish on an issue of 1961 honoring the Economic Commission for Latin America. It is one of a pair, the other being in English. In this instance one notes the exclusion of French, an official UN language and the language of Haiti as well as of the French dependencies in the Americas. Another discriminatory example is the 1960 pair of values for the Economic Commission for Asia and the Far East. As Figure 40 shows, the area covered by ECAFE includes China; however, Chinese, an official language of the UN, did not appear on either stamp, but only English and French. (Note that this UN stamp issue, unusually, follows the British example by making the identity of the issuing entity only implicitly clear. No wording such as "United Nations" is used, only the UN symbol. In effect, the UN was contravening the regulations of its own specialized agency, the Universal Postal Union, as regards identification of the issuing body.)

In 1969, the UN office in Geneva, Switzerland, began to issue its own stamps. The designs were generally coordinated with those of UN New York. Some were inscribed in the five official languages; a few in French and English. But most UN Geneva issues are exclusively in French (Figure 41). This, in turn, has stepped up an already incipient tendency for more and more issues of UN New York to be inscribed in English only. Thus, for example, the New York issue for the International Year of the Child, 1979, appeared in English only (Figure 42), although there were two denominations in the set, 15¢ and 31¢. Previously, and especially prior to the launching of the UN issues from Geneva, a two-value set would typically have been inscribed in English (the lower value, for first-class letter postage in North America) and in French (the higher value, for overseas airmail.) The emergence of French-inscribed issues for Geneva has

Figures opposite
37 38 39
40 41
42 43
44 45

brought about a corresponding drop in the use of French on the New York issues.

As a consequence of the Six-Day War and Middle East crisis, Arabic was voted the sixth official language of the UN in 1973. This has remained a dead letter as regards stamp-inscription policy. A recent definitive issue of UN New York continues to bear the same five official languages as in 1951 (Figure 43). A recent General Assembly resolution has called upon the UN Postal Administration to issue a stamp commemorating Palestine and the rights of the Palestinians. Such a hotly controversial issue may possibly include an Arabic inscription for the first time. It would continue a precedent established by the Namibia commemorative (Figure 44).

As the result of a treaty between the government of Austria and the United Nations, UN definitive stamps denominated in Austrian schillings were issued on August 24, 1979 (Figure 45). They were inscribed in German exclusively. Thus, the UN is in the paradoxical situation of using a non-official language (German) regularly on certain of its postal issues, while an official language (Arabic) has not yet been featured on a single UN stamp.

To conclude, we hope that we have demonstrated that visible language is an important matter on the postal issues of countries in many parts of the globe, as well as on the stamps of the United Nations and its offices. Nothing is left to chance in stamp design, and a careful examination of such designs will permit an interpretation of current language policy at a given date in a given country or stamp-issuing entity.[8]

1. On Francophonie, see particularly Brian Weinstein, "Francophonie: International Languages in Politics," in Albert Verdoodt and Rolf Kjolseth, eds., *Language in Sociology.* Louvain: Éditions Peeters, 1976. (Institut de Linguistique de Louvain. Bibliothèque des CILL. 5), pp. 265-304. Also, though far from impartial and now heavily outdated, consult Auguste Viatte, *La Francophonie.* Paris: Larousse, 1969. (Collection La Langue vivante).

2. On bilingualism in South Africa, the latest and best work is: L. W. Lanham and K. P. Prinsloo, eds., *Language and Communication Studies in South Africa. Current Issues and Directions in Research and Inquiry.* Cape Town: Oxford University Press, 1978.

3. See Robert Petersen, "Om grønlandsk—og om den nye grønlandsk retskrivning," in *Språk i Norden,* 1975.

4. On language policy and planning in Norway, works in English include: Einar Haugen, *Language Conflict and Language Planning: The Case of Modern Norwegian.* Cambridge, Mass.: Harvard University Press, 1966; Lars S. Vikør, *The New Norse Language Movement.* Oslo: Forlaget Novus, 1975; see also Richard E. Wood, "Twenty-one Recent Scandinavian Books on Language Policy" (review essay), *Language Problems and Language Planning,* 2 (1978), 35-49.

5. See, for example, Klaus Törnudd, *Svenska språkets ställning i Finland.* Helsinki: Holger Schildts förlag, 3rd, revised ed., 1978; Christer Laurén, ed., *Finlands svenskan. Fakta och debatt.* Borgå: Söderströms, 1978; Mirja Saari, "Über die sprachlichen Verhältnisse der Åland-Inseln," *Language Problems and Language Planning,* 2 (1978), 27-32.

6. The literature on language policy in Québec and Canada is enormous; let us cite here the leading bibliography: William F. Mackey, *Le bilinguisme canadien: bibliographie analytique et guide du chercheur.* Québec: Centre international de recherche sur le bilinguisme, 1978; also a useful book in English on Québec: John R. Mallea, *Québec's Language Policies: Background and Response.* Québec: Les Presses de l'Université Laval, 1977; and note also the *Annual Report* of the Commissioner of Official Languages, Ottawa, yearly since 1971 (report for 1970).

7. As for Canada, the literature on Belgium is enormous and sociolinguistic work is closely intertwined with work in politics, demography, history, etc. Let us cite only the best, yet incomplete and not updated, bibliography: Albert Verdoodt, *Les Problèmes des groupes linguistiques en Belgique. Introduction à la bibliographie et guide pour la recherche.* Louvain: Éditions Peeters, 1977. (Reprint of 1973).

8. Other studies of language policy on postage stamps include: Ralph S. Walker, "Languages on Stamps," *Scott's Monthly Stamp Journal,* 50(9): 289, 292-3, 301 (December, 1969); reprinted in *Topical Digest* 7 (1972), 23-5. On language teaching with stamps, a pioneer article is Ian F. Finlay, "Postage Stamps in Modern Language Teaching," *Modern Languages,* 49 (1968), 119-121, and specifically for French, Maurice G. Elton, "Culture via Airmail," *Foreign Language Annals,* 12-2 (1979), 117-120. The present author has examined French-language usage on postage stamps more specifically in Richard E. Wood, "Teaching *Francophonie* with Postage Stamps," *The Canadian Modern Language Review/La Revue canadienne des langues vivantes,* 36-1 (October, 1979), 105-124.

Signs in Ancient Egypt: Another Look at the Relation of Figure to Hieroglyph

Jean M. James

This article presents another attempt to solve the enigma of the peculiar manner employed by the ancient Egyptians to depict the human figure; it looks at the figure as a sign rather than as the result of a naive or pre-Greek method of representation. The figure functions as a part of the inscription. It has a scriptorial role as a determinative to specify a grammatical function. The conventions which shaped the formation of the figure as a hieroglyph also influenced the way figures which were not parts of inscriptions were drawn. The figure first appears either in a pictorial text or as part of a hieroglyphic text rather than as a vehicle for depicting human activities only.

THERE ARE almost as many explanations of the Egyptian convention for depicting the human figure as there are writers on Egyptian art.[1] The current consensus is that the Egyptian artist delineated what he knew to be present rather than only those parts of the figure he would actually see. Egyptian art dispensed with foreshortening and perspective; there was never any attempt to create pictorial space—that is, the representation of three-dimensional space on the two-dimensional surface of the picture plane we expect to see in realistic painting.[2] But perhaps we have been asking the wrong questions when we seek the reasons for the Egyptian figural convention in the context and terms of pictorial space. What if the Egyptian figure style is not the product of an attempt to represent reality which has taken an idiosyncratic form but a sign? Is there a connection between these peculiar depictions of the human figure and the hieroglyphs that appear with them?[3] Is Egyptian art an early and concrete example of the theories of semiotics, the study of signs?

Hieroglyphs comprise ideograms and phonograms. Ideograms are of two basic types, logograms and determinatives. Determinatives, with which this paper is concerned, are placed at the end of phonetically spelled out words and are either generic, categorizing

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groups of words, or they are specific, depicting a particular action. Determinatives indicate the meaning of the signs, the hieroglyphs, they accompany. Some determinatives are pictures of the human figure.[4]

Pictures antedate hieroglyphs as message bearers or signifiers representing a meaning, the signified. The function of any sign is to convey meaning as clearly as possible. The requirements of communication through the medium of visible signs surely must have shaped the Egyptian figure style. The designs on Gerzean pottery (ca. 3400 BC) might well be picture writing (pictographs) rather than figural decoration. Hieroglyphs appear in the archaic period (ca. 3200 BC) in combination with what are certainly pictorial texts. The predynastic tomb painting from Hierakonpolis (ca. 3200 BC), the earliest example of wall painting in Egypt known to date, might well be a pictorial text, disorganized though it may appear. Hieroglyphs are absent and the many figures, some of them in boats, are scattered across the surface singly or in groups. This painting does not make much sense as a picture but it might make sense as a text if we knew how to read it.

As pointed out by Whitney Davis in his article on register composition, the artist in predynastic Egypt had to solve the problem of representing events which had taken place in time and space, four dimensions, on a two dimensional surface.[5] One could also say that the artist must retell a story using visual signs. The initial solution was to employ the bird's-eye view which appears on Gerzean pots and on the Hierankopolis painting as well. There we see a group of figures standing around a circle and laid out like the spokes on a wheel, the circle being the hub. Another solution was to use a groundline, and groundlines may have formed the basis for writing.[6] These two methods are combined on the somewhat later slate palettes to present the subject in an orderly way. The arrangement of the figures has been rationalized and we have legible pictorial texts. There is no difference semiotically between pictorial texts and scriptorial texts; both are groups of signs arranged in a logical way.

The Battle palette (Figure 1) does not use groundlines on the side shown here. Several separate events are shown, as was also the case in the Hierakonpolis painting, but there is a sense of order in the arrangement of the figural groups on this palette which is lacking in the painting. What is obvious is that the figures with the curly hair have lost. Two have their arms held behind their backs by signs for nome standards which symbolize the units of the victorious forces from several districts, or nomes. Another loser is being gutted by a lion, symbol of the victorious ruler. Others lie dead and are pecked

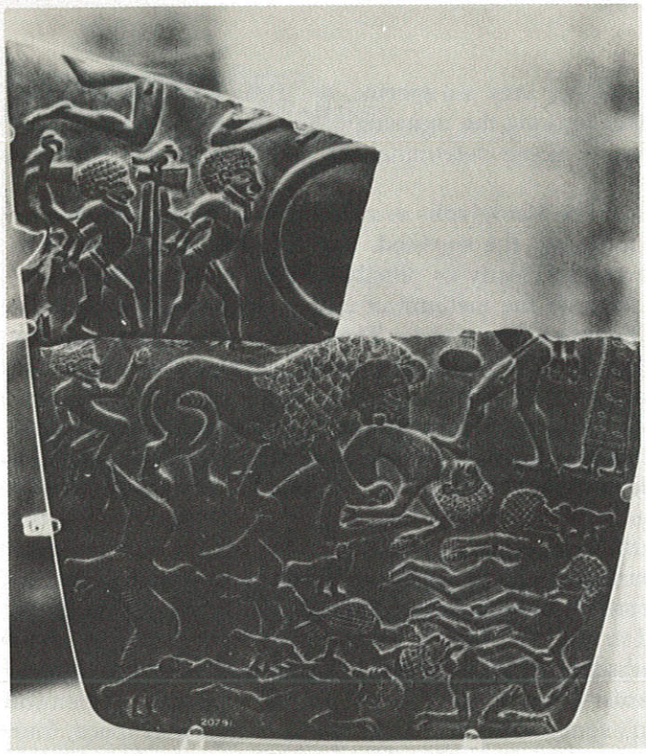
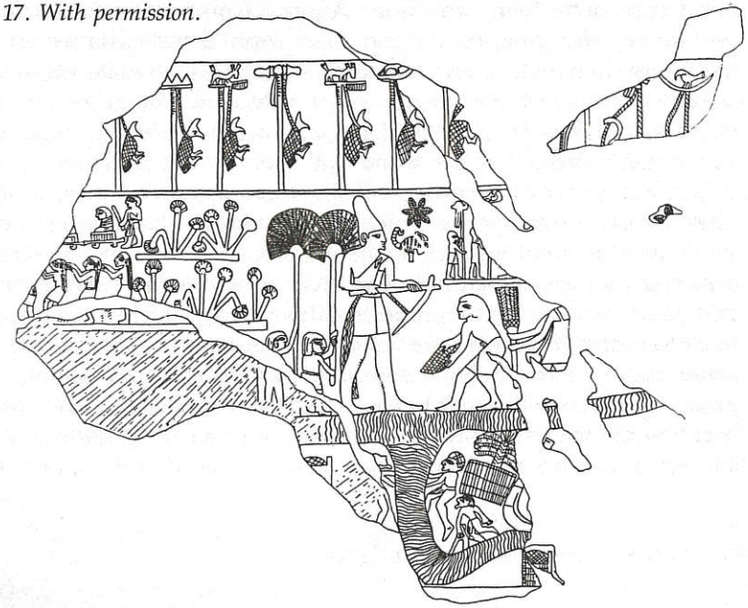


Figure 1 Battle palette, London, British Museum. R. Alexander photo. With permission.

Figure 2 King Scorpion macehead. Line drawing from W. S. Smith, The Art and Architecture of Ancient Egypt *(Harmondsworth: Penguin Books, 1958), fig. 4 p. 17. With permission.*



at by vultures. One more, perhaps a leader, has his arms held behind his back by a man wearing a long skirt who clearly is one of the conquerors. Those who have been taken captive are placed above those who have fallen; the living are being taken away, the dead are left to the vultures. The lion is the symbol of the king but might also, like the vultures, represent observed fact. Can we be sure that lions did not feed on dead warriors in predynastic times?

The King Scorpion macehead (ca. 3200 BC, Figure 2), shows how quickly this process of organization and rationalization of a pictorial text advanced. This carved ceremonial macehead was deposited along with other maceheads and the Narmer palette in a temple at Hierakonpolis. We see on it both the use of groundlines and the bird's-eye view which is used to depict a small landscape. Each figural group has a groundline. The nome standards form a border along the top. A procession in two files is shown on the left. A landscape is placed below the figure of the king. King Scorpion—identified by two hieroglyphs, a rosette combined with a scorpion, and by his large size and his attributes (crown, special kilt, and tail)—stands holding a digging instrument, prepared to cut the first irrigation ditch of the flood season.[7] A worker is ready with a basket to carry away the dirt. The river is shown and doubles as a groundline. A large ditch and two workmen are shown below.

The composition of this piece is arranged in a logical and legible way. Word signs (hieroglyphs) are added as captions. We already know from his attributes and size that we see the figure of a king; the rosette and scorpion tell us which king. In addition what we call the Egyptian figural convention is used but only for the king. It will be noted that the walking captives on the upper left of the Battle palette are shown in what we would call realistic profile. The distortions of the figures of the dead are intended to make it quite clear that they are dead. The same conventional distortion appears on the bottom of the Narmer palette (Figure 3) which is somewhat later than the Battle and Scorpion works.

We find on the Narmer palette a pictorial text with written commentary organized to read from top to bottom. Groundlines are used but the depiction of landscape, as seen on the Scorpion macehead, has been dropped. The back of the palette is shown here and can be read as follows, beginning at the top. "King Narmer [his name is written in two hieroglyphs placed inside the pictograph of a palace facade, a combination replacing the earlier rosette and pictograph, at top center] under the protection of the goddess Hathor [symbolized by the cow's heads to left and right], slays his foes [shown in the central portion of the palette]." As the god Horus he

takes possession of the papyrus land (this is the statement made by the composite hieroglyph to the right).[8] Narmer's vizier stands behind him in attendance and has his title sign just as the vanquished enemy chieftan has his. Furthermore, the king has taken possession of a city of his enemies (as shown at the bottom by the sign for a city wall and another sign placed above figures representing dead enemies).

Here the two texts, pictorial and scriptorial, combine and the figural convention is used for Narmer, his vizier, and his captive. It would appear that as the text increases in importance, so the figure decreases in realism and becomes more sign-like than life-like. The convention for the figure of the king has become a formula. The formulaic figure is not used on the Battle palette. On the Scorpion macehead it is used only for the king who has his name written next to him. In the Narmer palette the formulaic figure has become standardized. It is used just as consistently on the front side (not shown here) as well.

An interesting exception to the figural formula is shown on a stone slab which was found by Walter B. Emery when excavating at Saqqara (Figure 4). This carved slab was used in the casing of a Third Dynasty shaft tomb which had been cut through the superstructure of the First Dynasty tomb 3507.[9] It is Emery's belief that this slab, obviously reused, may have belonged to the First Dynasty tomb, thought to be that of Queen Her-nit, consort of Zer, who died early in the reign of King Udimu (ca. 3000 BC).[10]

This slab is probably nothing more than a sculptor's trial piece. What is worth notice is the use of a non-formulaic, realistic, profile. The two kings are shown as they would actually appear. They wear the Red Crown of Lower Egypt and the short robe used for the Heb-Sed festival of rejuvenation. The same presentation can be seen in a relief from the Fourth Dynasty sun temple of Niussere at Abu Gorub. Perhaps this is the conventional way to depict the Pharaoh when he is performing this particular ritual. This trial piece and the Abu Gorub relief offer some scanty evidence for believing that the Egyptian artist was not hindered by a "pre-Greek" method of drawing.[11] He could draw and carve realistically rather than pictographically when the situation allowed him to do so.

We have seen how the figure was turned into a formula as hieroglyphs enter into and become more important in predynastic and early dynastic carvings on stone. During the First Dynasty the figure is subordinated to the inscription and becomes a determinative, another hieroglyph. The stele of Sabef, reported by Petrie, is the most

Figure 3 Narmer palette, backside. Line drawing from Kurt Sethe, Das Hieroglyphische Schriftsystem *(Gluckstadt and Hamburg: J. J. Augustin Verlag, 1935), p. 11.*

Figure 4 Carved slab. From W. B. Emery, Great Tombs of the First Dynasty, *III (London; Egypt Exploration Society, 1958), pl 97a. With permission.*

Figure 5 Wooden panel of Hesy-ra. From Edward L. B. Terrace and Henry G. Fischer, Treasures of Egyptian Art from the Cairo Museum *(Boston: Museum of Fine Arts, 1970), p. 35. With permission.*

Figure 6 Detail from Figure 5.

highly developed of the First Dynasty stelae found at Abydos.[12] Sabef is shown holding his staff and a short rod. The inscription gives his various titles but is not a caption. The inscription is the message and the figure is there to tell the reader what the message is about. This combination of figure with inscription is called a complemented writing. That is, as defined by Battiscombe Gunn, the written name is accompanied by a picture, or a statue, of the person named and so no other determinative is needed.[13] The picture or statue makes a written determinative redundant because the image itself is the determinative.[14] Gunn goes on to say, "In all such cases writing and picture are but differentiations of a single impulse to presentation."[15] This use of complemented writing continues in use throughout Egyptian history and may well be the real reason why the figural formula remained unchanged.

The formula for the seated figure takes shape in the Second Dynasty (2980-2780 BC) and continued in use from then on. The deceased is shown seated at an offering table placed below and to the left of an inscription giving the name and titles of the dead and a list of foodstuffs provided for the sustenance of the soul in the after-life. The pose is always the same: the face is in profile, the shoulders are frontal, the torso is twisted, and the legs are in profile. The left arm is crossed over the chest, the right arm extends towards the table. This same pose, when used in Eighteenth Dynasty banquet scenes, is an example of the carry-over of the scriptorial figure into a pictorial context. It was not easy for the Egyptian artist to break out of the figural convention used in scriptorial contexts.

The Third Dynasty (2780-2680 BC) wooden panel from the tomb of Hesy-ra (Figure 5) is often cited as the prototype for the figural canon used from then on. "Canon" when used to describe the figure in Egyptian art refers to the system of proportions which standardized the drawing of the figure. But no notice has been taken of the relation of the figure of Hesy-ra to the inscription above him. This figure of Hesy-ra, like that of Sabef in the First Dynasty, is also a determinative and so we have here another complemented writing in which the figure is an integral part of the inscription.

There is another figure in this inscription (Figure 6). It is an old man, the hieroglyph for old age. Except for their size and the greater detail in the larger figure of Hesy-ra, the two figures are almost the same; the figural formula is identical, the poses are similar, the heads are carefully carved. Large or small, both figures are hieroglyphs.

Egyptian pictures, which are signs, were texts before they were art whether they were painted, or carved in low relief.[16] Messages, in-

formation, statements about events were first set down in pictorial, or pictographic, texts like the Hierakonpolis wall painting. Later, in predynastic and early dynastic carvings on palettes and maceheads, hieroglyphs were added to supplement the pictures by identifying certain persons and places. In the First Dynasty, however, an important change takes place. Pictures of men and women suddenly become part of hieroglyphic inscriptions and the manner in which the figure is drawn is frozen in the formula originally used to show the king. Another formula based on that for the standing figure is invented for the seated figure; it is simply a standing figure bent to fit on a chair with the arms rearranged to show the act of reaching towards a table.

The immutability of the hieroglyph has been remarked on by N.M. Davies who noted that the forms of the hieroglyphs of the Third Dynasty were handed down through the centuries without deviation.[17] We should not be amazed that the figural convention, or formula, was just as unchanging. Why should this consistency be regarded as amazing or inexplicable? It is truly inexplicable only if one insists on thinking about the Egyptian figure style in terms of artistic development on the European model wherein representational forms show a progression from primitive to more advanced, that is realistic illusionistic, states that can be traced and analyzed as stylistic sequences. But as soon as Egyptian figures are looked at not as representational signs, that is as art forms, but as linguistic signs which by their very nature must remain true to type in order to be legible, the puzzle can be solved. While a naive vision may well have shaped the Egyptian figure in its inception, it was the use to which that figure style was put in scriptorial contexts that kept the figure style essentially unaltered.

But what about the scenes of daily life we know from tombs of all periods from the Fourth Dynasty on? What about the huge sunken reliefs on temple walls and pylons? They, too, are texts but they are usually narratives and are a good deal less formal than the inscriptions which employ the standing and seated figure as determinatives. Painting as decoration of domestic interiors is in another category altogether and does not concern us here. It is not unfair to the ancient Egyptians to say that the first purpose of their pictorial art, an art of the human figure, was to convey information. The specific purpose of funerary art was to assist the dead and to provide by means of pictures for the support and sustenance of the soul in the after-life. In public art, the reliefs on temple pylons for instance, glorification of a victorious Pharaoh is often its purpose.

The hieroglyphic sign seems to have shaped the conventions of Egyptian figural art. Egyptian art, an art primarily of figural signs, should be thought of as pictographic language and the use of pictographic figures (signs) as communicators was practiced by the ancient Egyptians long before the mid-nineteenth century when Charles Saunders Pierce began to work out his theory of signs.

1. My thanks to Professor Robert L. Alexander of the University of Iowa for his perceptive and useful comments.
2. See Heinrich Schaefer, *Principles of Egyptian Art*, ed. Emma Brunner-Traut, tr. John Baines (Oxford: Clarendon Press, 1974), *passim*; E. L. Gombrich, *Art and Illusion* (New York: Pantheon, 1956), p. 18; E. B. Smith, *Egyptian Architecture as Cultural Expression* (New York, London: D. Appleton-Century Co., 1938), p. 45, p. 241; Irmgard Woldering, *The Art of Egypt* (New York: Crown Publishers, 1965), p. 32.
3. See K. Michalowski, *The Art of Ancient Egypt*, tr. Norbert Guterman (New York: Henry Abrams, n.d.), p. 124; W. S. Smith, *The Art and Architecture of Ancient Egypt* (Hammondsworth: Penguin Books, 1958), p. 4; Alan Gardiner, "The Nature and Development of Egyptian Hieroglyphic Writing," *Journal of Egyptian Archaeology*, 2 (1915), p. 17; W. C. Hayes, *Sceptre of Egypt*, part I (Cambridge; Harvard University Press, 1953), p. 43; Cyril Aldred, *The Development of Egyptian Art from 3000 to 1315 BC* (London: Alec Tiranti Ltd., 1952), p. 6; Schaefer, p. 256.
4. I am grateful to the referee enlisted by *Visible Language* for comment and information on these points.
5. Whitney M. Davis, "The Origins of Register Composition in Predynastic Egyptian Art," *Journal of the American Oriental Society*, 96 #3 (July-Sept. 1976), 404-418, *passim*.
6. Humphrey Case and Joan Crowfoot-Payne, "Tomb 100: the *Decorated Tomb at Hierakonpolis*," *Journal of Egyptian Archaeology*, 48 (1961), p. 17.
7. A. J. Arkell, "Was King Scorpion Menes?," *Antiquity* No. 145, 37 (1963), p. 33. I am indebted to the *Visible Language* referee for calling this article to my attention.
8. Gardiner, p. 73-74.
9. Walter B. Emery, *Great Tombs of the First Dynasty III* (London; Egypt Exploration Society, 1958), p. 84.
10. Ibid., p. 73.
11. Schaefer, p. 44.
12. W. M. F. Petrie, *The Royal Tombs of the First Dynasty*, I and II (London: Egypt Exploration Society, 1900-2), p1. XXI and XXXVI, and p. 44-45.
13. Cecil M. Firth and Battiscombe Gunn, *Teti Pyramid Cemeteries*, 2v. (Cairo, 1926), v. 2, p. 171, note 2.
14. Henry Fischer, "Redundant Determinatives in the Old Kingdom," *Metropolitan Museum Journal* (New York), 8 (1973), p. 7.
15. Firth and Gunn, v. 2, p. 171, note 2.
16. I. J. Gelb, *A Study of Writing* (Chicago: University of Chicago Press, 1957), *passim*.
17. Nina M. Davies, *Picture Writing in Ancient Egypt* (London: Oxford University Press, 1958), p. 11.

Spatial cues in text

Some comments on the paper by Frase & Schwartz (1979)

James Hartley

Abstract

Frase and Schwartz (1979) found that meaningfully segmented technical prose was searched significantly faster than the same text typed in a standard format. In this paper the rationale and methodology of Frase and Schwartz are criticised and two studies are described which attempted to replicate and extend their findings using a different methodology. Frase and Schwartz's original materials were used and standard layouts were compared with meaningfully indented texts and vertically spaced texts. In both of these studies, however, no significant differences were found between the times taken to retrieve information from the different layouts. Finally these results and their implications are discussed in a more general framework than that provided by Frase and Schwartz.

Introduction

Frase and Schwartz (1979) argued and demonstrated that technical prose was searched and understood more quickly when it was "meaningfully segmented" and indented. What they meant by this term is best illustrated by an example. Figure 1a shows a standard layout and Figure 1b shows the same text "meaningfully indented."

Frase and Schwartz reported the results from five experiments in which adult participants verified test sentences as true/false whilst reading a page of complex technical information. They found that meaningfully segmented and indented text resulted in 14-18% faster response times than did text typed in a standard format. Their results indicated that it was the meaningful segmentation that was important; experiment five showed that once a text had been meaningfully segmented, then

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the addition of indentation cues did not significantly affect response times.

The purpose of this brief paper is to offer some comments on the paper by Frase and Schwartz. In the main these comments focus on the rationale and the methodology of their experiments. Some possible revisions to both of these are suggested and carried out, and the paper concludes with a more general discussion than that provided by Frase and Schwartz.

However, throughout this paper there are certain conflicting issues which I have been unable to resolve. Basically these amount to three beliefs. These are: (i) a belief, shared with Frase and Schwartz, that the spacing of text is an important aid to comprehension; (ii) a belief, nonetheless, that it is possible to criticise their studies and their findings; and (iii) a belief that my own experiments designed to shed light on these problems (and reported on below) in fact really fail to do so! It would seem then that the issues to be discussed in detail below—spacing, timing, and comprehension, and their interrelationships—are more complex than at first appears.

Frase & Schwartz's rationale

The rationale underlying the Frase and Schwartz study was that learning, comprehending, and recalling prose all involve the segmentation of text into meaningful groups, and that segmenting text makes these groupings clearer to the reader. It was argued that normally printed text does not make these groupings readily apparent: with standard justified text (i.e., straight left- and right-hand edges) line endings indiscriminately interrupt sentences, clauses, phrases, and words (which are hyphenated). It is true that the use of punctuation marks and paragraph indentation can provide cues about meaningful components in text, but, it was argued, standard text does not contain enough of these cues to facilitate the reader's task of segmenting it. This problem, it was observed, was particularly acute with technical materials.

Comments on the use of the term typographical cue

Frase and Schwartz referred to all of these cues as *typographical cues.* Personally I prefer the term *spatial cue,* for the phrase "typographical cue" suggests to me a change in the typography or the print—e.g., a change to

italic or bold-face letters. Segment boundaries in text, however, are mainly conveyed by space and by punctuation marks. Sometimes, of course, spatial and typographic cues are combined (e.g., headings in capitals). Text thus provides cues which can be classified as spatial, typographic, or both.

Comments on the review of related studies

Frase and Schwartz reported how their investigations were prompted both by a practical concern and by a theoretical one. The practical concern was with the difficulties that readers faced in processing technical documents; the theoretical concern was with improving readers' comprehension by manipulating the spatial arrangement of the text. Frase and Schwartz reviewed six studies on this latter issue (North and Jenkins, 1951; Coleman and Hahn, 1966; Anglin and Miller, 1968; Carver, 1970; Cromer, 1970; Hartley and Burnhill, 1976). They concluded that five of these studies indicated a superiority for segmented over standard text.

Other studies not included in their review were those of Coleman and Kim, 1961; Epstein, 1967; and Murray, 1976 (with positive results); those of Nahinsky, 1956; Hartley and Burnhill, 1971; and Burnhill et al., 1975 (with non-significant results); and that of Klare et al., 1957 (a negative result). A further study, which refers to the work of Frase and Schwartz, has indicated that segmenting text improves the reading scores of low-ability children (Mason and Kendall, 1978). Thus, although there is evidence that segmenting—of various kinds—can help the understanding of text, the picture is more complex than that presented by Frase and Schwartz.

In addition, one needs to observe that in reaching their conclusions, Frase and Schwartz pooled the results from experiments which had different aims and which used different kinds of segmentation. Cromer (1970), for instance, was interested in grouping text according to phrase boundaries; Hartley and Burnhill (1971) were interested in ending lines at syntactic boundaries; and Burnhill et al. (1975) and Hartley and Burnhill (1976) were interested in totally re-organising documents in order to display more openly their underlying structure.

Comments on the method of segmenting

Frase and Schwartz tested the effectiveness of their ideas by comparing segmented pages with standard ones. The same wording and punctuation occurred in both formats. The segmented format was produced using the authors' joint judgement of where the meaningful boundaries occurred. Frase and Schwartz claimed that Johnson's (1970) study on pausal units supported their assumption that accomplished readers had sufficient language competence to agree between them where the segments should be made in technical prose. Johnson, in fact, was concerned with "pausal units" in a particular folk-tale, and he himself commented "Levitt (1956) has shown there is little agreement among editors as to what are the sub-units in a prose passage" and "Judgements concerning the meaningfulness of the sub-units have been decidedly subjective in nature."

To test the validity of Frase and Schwartz's assumptions in this respect I asked ten students to segment a technical passage following their inspection and study of one of Frase and Schwartz's passages. The results indicated that the students did indeed segment at phrase boundaries, but that there was great discrepancy between them concerning the width of these boundaries; in short there was not the uniformity suggested by Frase and Schwartz.

For example the sentence, "the balance is a sensitive piece of precision laboratory equipment designed to give accurate readings over a long period of time" was segmented by one student thus:

The balance is
    a sensitive piece of precision laboratory equipment
    designed to give accurate readings
        over a long period of time.

by another thus:

The balance is
    a sensitive piece of
        precision
        laboratory equipment
    designed to give accurate readings
        over a long period of time.

and by a third thus:

The balance is
    a sensitive piece of
        precision laboratory equipment
            designed to give
                accurate readings
                over long periods of time.

ASSIGNMENT PROCEDURES 1a

Conventional assignment procedures are applied when subscriber service is assigned to a spare physical circuit that is providing a working derived circuit. Additional information related to the derived line is entered in the remarks section of the service order (Figure 3.9). Rearrangement of the cable pairs that include pairs used for single channel carrier circuits should be avoided where possible. Such arrangements require coordination among the engineer of outside plant, assignment office, central office, outside work forces, and repair service bureau to insure that transmission requirements are met. Also, bridge tap restrictions for single channel carrier application may not permit cable pairs to be half-tapped in the central office and/or field location, and may prohibit use of carrier once the outside plant facilities are reconfigured.

ASSIGNMENT PROCEDURES 1b

Conventional assignment procedures are applied
when subscriber service is assigned
to a spare physical circuit
that is providing
a working derived circuit.
Additional information related to the derived line
is entered in the remarks section
of the service order (Figure 3.9).
Rearrangement of the cable pairs that include
pairs used for
single channel carrier circuits
should be avoided
where possible.
Such arrangements require coordination among the
engineer of outside plant,
assignment office,
central office,
outside work forces, and
repair service bureau
to insure that transmission requirements are met.
Also, bridge tap restrictions
for single channel carrier application
may not permit
cable pairs to be half-tapped
in the central office
and/or field location,
and may prohibit
use of carrier
once the outside plant facilities are reconfigured.

ASSIGNMENT PROCEDURES 1c

Conventional assignment procedures are applied when subscriber service is assigned to a spare physical circuit that is providing a working derived circuit.

Additional information related to the derived line is entered in the remarks section of the service order (Figure 3.9).

Rearrangement of the cable pairs that include pairs used for single channel carrier circuits should be avoided where possible.

Such arrangements require coordination among the engineer of outside plant, assignment office, central office, outside work forces, and repair service bureau to insure that transmission requirements are met.

Also, bridge tap restrictions for single channel carrier application may not permit cable pairs to be half-tapped in the central office and/or field location, and may prohibit use of carrier once the outside plant facilities are reconfigured.

Figure 1a. *One of the passages used in the standard layout. (The original was in pica sized type.)*

Figure 1b. *The same passage "meaningfully indented" by Frase & Schwartz. (The original was in pica sized type.)*

Figure 1c. *The same passage spaced according to the procedures advocated by Hartley and Burnhill. (The original was in pica sized type.)*

This problem of segmenting text is of particular interest to me. Peter Burnhill and I have proposed a different and (in our view) simpler way of spatially organising text which is structurally complex (see, e.g., Burnhill, 1970; Hartley, 1978, 1980a, b). With this approach one is not so much concerned with the segmentation of the phrases and clauses as with the overall structure of the document.

Peter Burnhill and I have argued that the structure of text can be displayed to a reader by varying in proportion the amount of vertical space between units in the text. Line endings can be determined by syntactic boundaries, but indentation is only used as a device for conveying substructure when the text has several levels in its hierarchical structure (see, e.g., Hartley and Burnhill, 1976). To be brief, the approach that we advocate would produce quite different layouts from the one advocated by Frase and Schwartz (see Figure 1c). The question thus arises of how these methods would compare.

Methodological considerations in designing subsequent studies

In carrying out experiments to make such comparisons experimenters make certain decisions about how best to proceed—about what to include and what to omit. In order to appreciate the decisions made concerning the experiments to be reported below it is first necessary to consider in more detail the methodology and approach of Frase and Schwartz.

The basic procedure used in the five experiments was for the experimenter to hand (through a window) a sentence to a participant, who then indicated to the experimenter when he or she had read and understood it. The participant was then given a copy of a passage (in the segmented or standard format) and he or she had to judge whether the original sentence was true or false. The time taken from the presentation of the passage to the judgement "true/false" was recorded by the experimenter. (Both the sentence to be verified and the passage were available to the participant during this time.)

There were eight sentences (half true and half false) for each passage and half of the judgements were made on segmented passages and half on standard ones. Two short passages (and sixteen questions) were used initially for practice and these were followed by the five experimental passages. Although Frase and Schwartz (1979) do not specifically say so in their paper, the participants were given feedback about the accuracy of their judgements with the practice passages to establish a criterion of over ninety percent correct (Frase, personal communication).

An experimental session thus consisted of forty judgements from each participant, and the orders of questioning, the passages and their layout were all counter-balanced. The participants were volunteer college graduate

technical aides in Experiment 1 (N=8) and paid college summer school students in Experiments 2, 3, 4, and 5 (N=16 in each case).

A critique of the Frase and Schwartz methodology

This experimental design seems to have at least one limitation. Each participant studied each passage in the two formats, and consequently could not fail to have some idea about the purpose of the experiment. Furthermore, of course, the experimenter also knew the aim of the investigations. The data obtained were time measures, and, although the average time to verify each sentence was 25 seconds, the average difference between the experimental and control passages in the five studies was only 3.5 seconds. In short, precise timing was necessary for a large number of judgements in a situation where both the experimenter and the participants would have a clear idea what to expect.

Consequent decisions

In order to get over these difficulties I decided to see if I could reproduce Frase and Schwartz's findings under different conditions. The main changes made in the experiments to be reported were that each participant would see only one layout of the passages (standard *or* segmented) and that he/she would be timed answering all eight questions together (rather than separately). This procedure, it was felt would (i) give the experiment greater ecological validity, (ii) reduce the possibility of cumulating errors that might arise from fine timing, and (iii) provide a more stringent test of the general hypothesis.

A third condition would also be included. In this condition participants would study the same passages set in the layout advocated by Hartley (1978). In practice this involved typing out the material in the standard way *either,* for lengthy texts, providing a line space (without indentation) between each sentence within a paragraph and two line spaces (without indentation) between paragraphs, *or,* for passages comprised of one sentence paragraphs, providing a line space (without indentation) between the paragraphs (see Figure 1c).

A summary of the differences between the methods

To summarise: Frase and Schwartz recorded how long subjects looked at a text in order to verify a *single* sentence. The subjects had read and understood this sentence *before exposure to the text.* They knew they had to be accurate. In

the experiments described below the experimenter recorded how long subjects looked at a text and verified *all eight* sentences. This time *included* the time needed to read and understand the sentences. Again the subjects knew they had to be accurate. The aim of these experiments was (i) to see if Frase and Schwartz's results could be replicated with this different methodology, and (ii) to see how vertically spaced text would compare with meaningfully indented text in these conditions.

Experiment 1. Methodological details

Materials. Three of Frase and Schwartz's five passages were selected for use in this experiment. These were entitled Assignment Procedures, Observing Procedures, and Equipment Changes. These passages included the ones that produced the highest and the lowest differences in the original Frase and Schwartz study. Each passage was prepared in three versions: standard, meaningfully segmented, and vertically spaced. Details of these passages are given in Table I.

Table I. Characteristics of the experimental passages

	Assignment Procedures	Observing Procedures	Equipment Changes
Number of words	127	279	166
Number of sentences	5	11	7
Average word length (syllables)	1.96	1.55	1.52
Average sentence length	25.40	25.40	23.70
Estimated Grade Level[1]	13.50	10.00	9.60
Number of lines in standard format	15	26	20
Number of lines in segmented format	29	43	42
Number of line feed units in vertically spaced format	26	52	37
Mean time to verify sentences (seconds)			
In standard format[2]	26.43	38.82	24.78
In segmented format[2]	20.86	31.76	23.10
Approximate % reduction	21%	18%	7%

1. Based on Flesch (1949) reading ease score
2. Based on data presented by Frase and Schwartz (Experiments 1 and 2)

For each passage eight sentences were typed out on a single sheet of paper followed by the words true/false. These sentences were the same as the ones used by Frase and Schwartz.

Two practice passages (somewhat shorter than the experimental ones) were prepared in each layout, and each passage was followed by eight sentences for verification. These practice passages and sentences were the same as those used for practice by Frase and Schwartz.

Participants. The participants were fifty-four paid American undergraduate college students (nine men and nine women in each condition).

Procedure. Each student was tested individually. The nature of the task (read the passages and decide whether each sentence is true or false) was explained and the first two passages were done for practice. An emphasis was made on being accurate; the instructions were, "Take as long as you like: aim to get the questions right," but subjects were not given feedback about their performance. The practice passages were always presented in the same order; the order of the remaining three experimental passages was counterbalanced. All the passages for a particular participant were in the same format.

The results

Accuracy. The mean proportion of sentences verified correctly was 0.83 for the standard text, 0.85 for the meaningfully indented, and 0.84 for the vertically spaced passages. These figures are somewhat lower than those obtained by Frase and Schwartz (0.90 and over).

Response times. The response times data are shown in Table II. These data were analysed by a three-way analysis of variance: layouts x passages x sex.

The overall mean time to respond to the standard text was 14.7 minutes (s.d. 5.0), to the meaningfully segmented text it was 12.3 minutes (s.d. 3.4), and to the vertically spaced text it was 12.8 minutes (s.d. 3.1). These differences were not statistically significant $F(2,96) = 1.79$, $p < 0.18$. The main effect for the passages was significant, $F(2,96) = 40.68$, $p < .001$. There were no significant sex differences, nor were there any significant interactions between the three main effects.

Experiment 2

Experiment 2 was a replication of Experiment 1, with thirty-six British paid undergraduate students as participants (six men and six women in each condition). In this experiment the students were instructed to read through the passages first before verifying the sentences.

Table II. The means and standard deviations of the verification times and the average proportion correct (in italics). U.S. data: 9 men and 9 women in each condition.

			Passages A	O	E	Total	All Participants
Standard text	Men	$\bar{x}$	4.7	5.7	5.2	15.6	
		s.d	2.4	2.2	1.9	6.2	
			0.78	*0.71*	*0.92*	*0.80*	
							14.7
							5.0
							0.83
	Women	$\bar{x}$	4.1	5.5	4.3	13.9	
		s.d	1.2	1.5	1.1	3.3	
			0.88	*0.80*	*0.89*	*0.85*	
Meaningfully indented text	Men	$\bar{x}$	3.9	4.6	3.9	12.4	
		s.d	1.3	1.5	1.9	4.3	
			0.79	*0.83*	*0.89*	*0.84*	
							12.3
							3.4
							0.85
	Women	$\bar{x}$	3.8	4.8	3.5	12.1	
		s.d	0.8	1.2	0.6	2.2	
			0.83	*0.79*	*0.92*	*0.85*	
Vertically spaced text	Men	$\bar{x}$	3.5	5.3	3.9	12.7	
		s.d	0.8	1.8	1.3	3.6	
			0.78	*0.72*	*0.86*	*0.79*	
							12.8
							3.1
							0.84
	Women	$\bar{x}$	3.5	5.4	4.0	12.8	
		s.d	0.8	1.1	0.8	2.5	
			0.89	*0.82*	*0.92*	*0.88*	

The results

Accuracy. The mean proportion of sentences verified correctly was 0.89 for the standard text, 0.93 for the meaningfully indented, and 0.88 for the vertically spaced passages. These figures are similar to those reported by Frase and Schwartz (0.90 and over).

Table III. The means and standard deviations of the verification times and the average proportion correct (in italics). U.K. data: 6 men and 6 women in each condition.

			Passages A	O	E	Total	All Participants
Standard text	Men	$\bar{x}$	5.0	7.2	6.0	18.2	
		s.d	1.6	0.9	1.5	3.4	
			0.85	*0.81*	*0.96*	*0.88*	
							17.5
							4.1
							0.89
	Women	$\bar{x}$	4.9	6.7	5.2	16.8	
		s.d	1.5	1.8	1.4	4.7	
			0.90	*0.81*	*1.00*	*0.90*	
Meaningfully indented text	Men	$\bar{x}$	5.2	7.2	5.1	17.5	
		s.d	1.9	2.9	2.1	6.9	
			0.94	*0.85*	*0.96*	*0.92*	
							18.1
							5.3
							0.93
	Women	$\bar{x}$	6.0	7.1	5.8	18.9	
		s.d	0.6	1.5	0.9	2.8	
			0.96	*0.90*	*0.96*	0.94	
Vertically spaced text	Men	$\bar{x}$	4.8	6.5	4.1	15.3	
		s.d	1.0	1.6	0.7	2.9	
			0.83	*0.83*	*0.91*	*0.86*	
							15.0
							2.2
							0.88
	Women	$\bar{x}$	4.5	5.6	4.5	14.6	
		s.d	0.8	0.7	0.4	0.9	
			0.83	*0.90*	*0.94*	*0.89*	

Response times. The response times data are shown in Table III. The mean time to respond to the standard text was 17.5 minutes (s.d. 4.1), to the meaningfully indented text it was 18.2 minutes (s.d. 5.3), and to the vertically spaced text it was 15.0 minutes (s.d. 2.2).
These differences were not statistically significant $F(2,60) = 1.77$ $p < 0.19$. The main effect for the passages was significant, $F(2,60) = 51.20$ $p < .001$. There were no significant sex differences nor any significant interactions between the three main effects.

Comments on the findings

The main results of Experiments 1 and 2 were clearcut:

(i) The students verified most of the sentences correctly: the average proportion correct was 0.84 in Experiment 1 and 0.90 in Experiment 2.
(ii) There were no significant differences between the times taken to verify the sentences in the different layouts in either experiment.
(iii) There were no significant sex differences in the results.
(iv) The only significant results to be found in these experiments resulted from the use of different passages. In both experiments the sentences from the passage "Equipment Changes" were easiest to verify and the length of the passages affected the total verification times.

Curious readers may ask if other comparisons were carried out. The answer is yes—the data were adjusted for passage length and difficulty (based on the verification scores), the results from the two experiments were standardised and combined, log transformations were made—but none of these measures changed the substance of these conclusions.

Despite this, however, both experiments suggest that spacing of some sort had some effect. In Experiment 1 segmenting the text led to a 15% improvement over the standard text, and spacing to a 14% improvement.
In Experiment 2, spacing similarly led to a 14% improvement. And, curiously enough, despite the non-significant F ratios, a simple t test between the segmented and the standard text in Experiment 1 was just significant ($t = 1.66$, d.f. 34, $p < .05$, one-tail), and in Experiment 2 a t test between the spaced and the standard text was, similarly, just significant ($t = 1.78$, d.f. 16.68, $p <$ .05, one-tail). In short, these data do suggest that the effects of spacing are present but the statistical support for reaching such a conclusion is weak.

To summarise the argument so far: In this paper I have expressed two objections to the Frase and Schwartz paper: I have criticised their method of segmenting text, and their experimental design. In my own experiments I have used their materials but I have changed the design.
The between-subjects design used in my experiments may have been a better design than that used by Frase and Schwartz in that the participants were unaware of what the experiment was actually about, but unfortunately, unlike Frase and Schwartz's design, it was not sensitive enough to indicate significant differences between the layouts.
The results obtained do little to clarify the debate between different forms of spacing and, of course, must remain specific to the materials and questions used.

It could be that increasing the sample sizes in my studies might have resolved this issue, but there are probably other factors too. Stressing accuracy (as opposed to speed) may have contributed to the fact that the layouts made little difference (although it is important to note that Frase and Schwartz did this also). Furthermore, the procedural differences in the instructions, the task, and the timing may all have made different demands on comprehension in my experiment from those in Frase and Schwartz's.
Their experiments simulated a situation in which a person comes to a passage with a question in mind and looks for the answer; my experiments simulated a more typical instructional situation.

Concluding comments: the need for a wider focus

In rounding off this paper, we need to consider wider issues. In particular we need to think more carefully about how different systems of spacing might aid retrieval and comprehension and where they might not.

Frase and Schwartz's rationale was that the way to make technical text easier to comprehend was to segment it, or to space it out in some way. I tacitly shared this rationale in designing the experiments reported in this paper, but it is not one to which I fully subscribe. I have argued elsewhere (Hartley, 1980a) that when a piece of original text is hierarchically spaced and "opened-up," then it is easier to

re-sequence it, to revise it, and to *re-write* it in such a way as to make it easier to understand. In short, one must pay attention to the *content* and the *purpose* of a document—as well as to its layout—in deciding how best it can be presented.

Furthermore, a wider consideration of other methods of spacing (not referred to by Frase and Schwartz) might suggest:

(i) that their method is suitable for short, complex technical passages which are frequently searched;
(ii) that my method is suitable for longer text which has a more complex structure than conventional prose, but which is less technical than the materials used by Frase and Schwartz;
(iii) similarly, that Jewett's method (Jewett, 1972a and 1972b) is suitable for longer and typographically less complex passages which have clear levels of material (e.g., main points, expansions and illustrations of these points, and incidental information); and
(iv) that Murray's (1976) method could be considered for material which is to be learned by heart.

(All of these four methods are illustrated in Hartley, 1980b.)

In addition it may be observed that my method is likely to be easier for typists and printers than the others, and also that, unlike the others, my approach takes into account the positioning of sub-elements (such as lists, tables, diagrams, technical drawings, and the like) within the total system (see Hartley, 1978; Burnhill, Hartley and Young, 1976).

Considerations such as these suggest that what is required is a comprehensive study involving different kinds of reading tasks (e.g., verification, search, comprehension, or application) and different layouts for different kinds of text. No doubt such a study would be difficult to do—but it would seem useful to begin to think about moving in that direction.

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I am grateful to Dana Fisher, Mark Trueman, Colin Byrne, and Alan Branthwaite for statistical assistance and advice, and to colleagues at Bell Laboratories and Keele University, as well as anonymous reviewers, for helpful comments on earlier drafts of this manuscript.

Finally, I am grateful to Peter Burnhill who prepared the typographic specification for the setting of this article.

To the Editor:

After 48 issues of *Visible Language* in which handwriting—the original means of making language visible—was hardly mentioned (with a few laudable exceptions), this important topic has finally been awarded an entire issue: Teaching and Learning the Craft of Handwriting (volume XIII number 1), guest edited by Charles Lehman.

Handwriting *is* important not just because of its history (that would not fill my wallet!)—not because it is the young person's first means of making language visible during nine long school years; not because it can join separated friends and hold families together; not on account of its therapeutical value for lonely people and those in distress; not only because it can convey important thoughts in appealing ornaments (some call it "art"). Handwriting is important today for two specific reasons:

It is, beside the family, the earliest, all encompassing civilising catalyst in children's education

After 400 years of slumber it can again fulfill important social tasks. Through the progress in photo-mechanical and electrostatic printing processes it is resurrected as a practical, appealing, and inexpensive means of mass communication.

If you will allow me a few comments on the articles in this special handwriting issue, I would like you to understand that I am making my notes as a practising calligraphic designer and as a teacher of many teachers of the craft.

I found Charles Lehman's general introduction so valuable that I had it reprinted with permission and distributed at a teachers' convention in Alberta, Canada, with the result that instead of the expected 25, 124 teachers attended the lecture. It must have been their first introduction to "real handwriting"—as 6- and 7-year-olds like to call it—having been exposed to "easy-to-imitate" (but impossible to handwrite fluently) geometric lettershapes. The lecture seems to have hit them as good news from a new gospel.

I must disagree with the quoted premise of Robert Bridges that handwriting teachers must of necessity be good handwriters. Here in Willowdale, where members of the Handwriters Guild started

again 28 classes last October, we are teaching handwriting as an intellectual exercise rather than a skill of hand. This way some students end up writing "better" than their teacher. The amount of intellect required to learn handwriting is minimal, to be sure, but *what the mind can perceive, the hand can execute.*

Lehman's use of the word "efficient" for lettershapes, his statement that "fluent . . . handwriting serves a student's reading [let us add spelling] ability as well as his need to pour out ideas," points to the fact that the lack of proper handwriting instruction hampers the development of the students' thinking process.

Also, the skeletons of geometric lettershapes written with a pointed handwriting tool impoverish the individual character of each lettershape. The denigration of the magnificent imperial roman capitals which originated from wide-nibbed, brush-like writing tools—as, e.g.,  —to the worm-like shape of  as illustrated by Gunnlaugur SE Briem, reveals the inefficiency of a pointed writing tool for the instruction of beginners: such an implement does not restrain the beginning writer to disciplined freedom. Trying to design a set of lettershapes to be written especially with a pointed tool for the instruction of beginners reminds me of the futility of shovelling your driveway during a blizzard: *the wide-nibbed tool serves for the instruction of beginning handwriters, the medium-wide nib serves the advanced one, and the pointed tool is for the accomplished handwriter.*

The efforts of Nicolette Gray to create a large amount of ligatures for the ease of writing with "all-direction pens" are still-born. We should enjoy having 26 lettershapes, the proper teaching of which fosters habits and abilities needed in later life. This approach is certainly better than offering the students many symbols and variations, which has been done in China for thousands of years and which today's Chinese try to eliminate from their visible language.

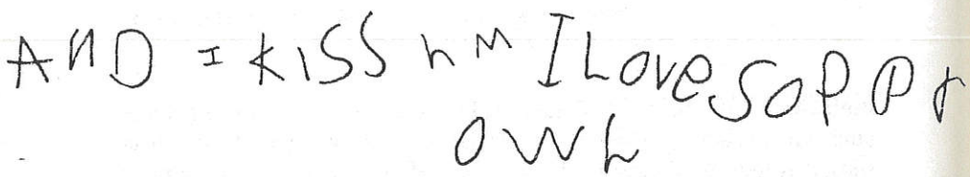
I love to see and read Nicolette's handwriting; but she is not a beginning handwriter, she is an accomplished one. All the pointed tools to her.

Iain Macleod and Peter Procter, in taking much care helping handicapped children, are reducing the chances for final success by

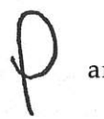
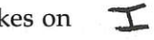
employing an inefficient set of lettershapes. The much beloved hooks at the ends of

tend to reduce ease of reading when they are used in speedy notetaking. This example  of supposedly two lettershapes shows actually three. The speedy handwriting of such hooks will necessarily lead to difficulties in deciphering a message.

Donald H. Graves also takes care of the handicapped. The hand-performed results may appeal to adults; children, however, will sharply criticize



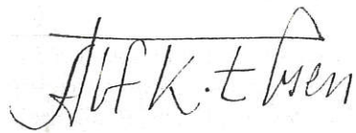
and I think justifiably so. Mixing essential lettershapes as *h*, *e*, and *r* with skeletons of the imperial roman capitals as

 and with its fluent brother  while at the same time putting end strokes on  and forgetting them on all other characters, demonstrates more misinformed teaching than a child's creativity. The lettershapes of western civilization developed slowly during more than two thousand years. To teach simply their skeletons, then expecting children to pass through these two millenia of development on their own to arrive at legible handwriting in a few school years is a surprising approach to literacy.

Handwriting is a mental discipline which should be taught as an adventure in making language visible. In my experience children love to follow the gentle guidance into this magic disciplined realm—as do adults. Just give them a chance instead of presenting them with skeletons.

To study Arthur Osley's article was a valuable experience. He translated from the originals the thoughts of the old writing masters on their craft. These fellows had to produce legible handwriting to make a living. Their suggestions and practice made it possible to compare my own lettershaping with their canons. I could find among their thoughts some confirmation of my execution of handwriting; other things I do would probably make them pause and wonder. And I might have to explain to them that today I have to cater to reading habits which emerged from 500 years of typographic development, not to those of their own times 350 to 450 years ago.

And long live *Visible Language* for the variety of articles published on this subject.



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No, late roman cursive wasn't a worm; a reply from contributor Gunnlaugur SE Briem

I find much to agree with in Alf Ebsen's ideas. The problem is obvious to us both. It's in solving it that we part company somewhat. He would like us all to write italic, with a broad-edge pen if possible. I think that could be a truly rewarding change. Especially if everybody would then write as beautifully as Mr Ebsen does. But I'd also like to explore a few other possibilities, just in case.

In his comments Mr Ebsen raises a few points that I'd like to give a second look.

1 I doubt we can seriously say that the late roman cursive was a denigration of the imperial roman capitals. The two styles were opposite ends of a broad writing and lettering spectrum. They served different needs.

   One reason that an informal style of writing develops is the demand for it. The late roman cursive was needed for quick, easy writing. And the unconnected, essentially geometric characters of Roman monuments weren't suitable for correspondence and documents.

2 I don't think that the late roman cursive letterforms reveal "the inefficiency of a pointed writing tool for the instruction of beginners." If surviving wax tablets are any evidence at all they suggest that in Rome monoline characters, written with a pointed stylus, were taught to beginners. When some of those pupils grew up they created the Imperial inscriptions we admire so much.

3 I think it's a bit unfair to liken the late roman cursive letter *e* to a worm. It presented a streamlined way of getting from one point of a character to another with the minimum of inconvenience to the scribe (see illustration). It was written with a pointed reed. The strokes did not attempt the richness that depends on a broad pen. But for the last three centuries at least the broad pen has hardly been a dominant tool in handwriting. Today most people use a ballpoint. And written with a monoline tool, even an excellent italic acquires much the same line quality as the late roman cursive had.

Mr Ebsen is a superlative instructor of writing and I feel that at least our objectives in the teaching of handwriting are markedly similar. As far as it goes, I'm proud to keep such company.

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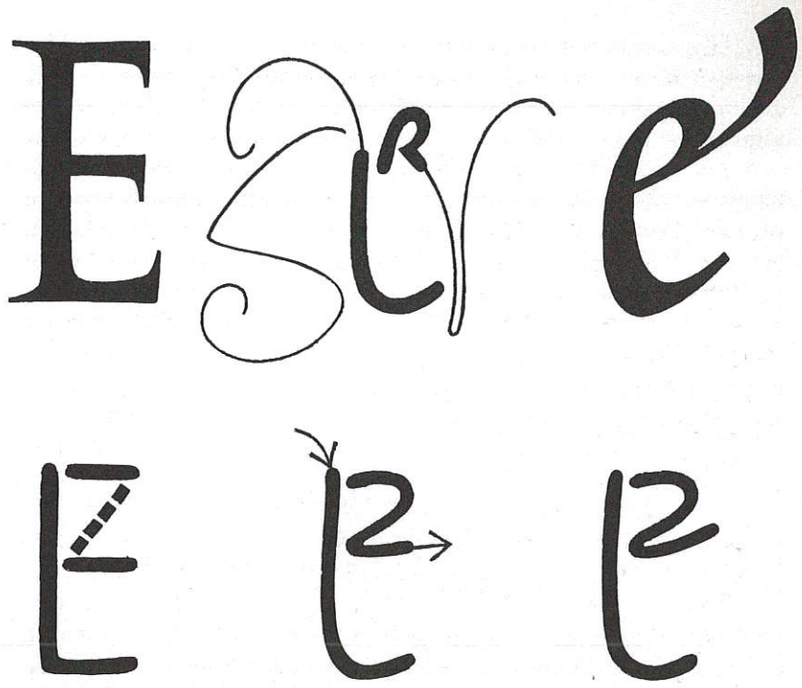

Different form, same movement pattern.

The top line shows the character *e* in three styles: imperial roman capital, late roman cursive (in the combination *g-e-s*), and italic. The movement pattern of the three styles differs very little. The modern loop-form of the letter occurred with a change in the pen when late italic developed into early copperplate in the late sixteenth century.

A reply from contributor Nicolete Gray

Alf Ebsen thinks my suggestions for the teaching of handwriting are still-born. I think that this is because he is not concerned with the quite specific problem for which I am trying to find a solution. This problem is that of finding a mood and a method of teaching the ordinary child in his first school years, which is directed towards the purposes for which he needs to write—that is, for speedy informal uses—and the instrument which he will certainly use: the "pointed" ballpoint or nylon-tipped pen.

Ebsen suggests that the "beginner" should start with a broad-edged pen. If this refers to the beginner-calligrapher, I would

certainly agree. But why then move on to the pointed pen? The broad-edged pen is a more sensitive tool—and its use has been fully explored! Moreover, it requires a different rhythm of writing, stroke rather than movement based. There is no progression here.

As for "enjoying" 26 lettershapes, is Ebsen not interested in fluent handwriting? Does this not mean joining letters? Unless you are practising very slow formal writing, this means altering the letters as you join them (as in Arabic). That is why it is worth working out beautiful joins, particularly of those letters which in any particular language normally come together and which will inevitably be joined in rapid writing.

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A reply from contributors Iain Macleod and Peter Procter

Our paper described a new method of teaching handwriting, based on computer techniques, which initial trials indicated was significantly effective. The success of the method has recently been confirmed in evaluation tests conducted by Lally (1980). Alf Ebsen comments only marginally on our work when he claims that we employ "an inefficient set of lettershapes" which "reduce our chances for final success." He contends that when used in speedy notetaking, hooks at the ends of certain of our letters will tend to reduce the ease of reading.

We did not discuss the question of style in any detail, because this was an issue separate from our central theme. We limited our exploratory studies to development of students' signatures in a publicly recognized and acceptable style associated with the ordinary handwriting of today's adults. We were neither revolutionary nor reactionary in our choice of the model alphabet. Rather, we employed a new strategy and a new technology to attack a previously intransigent problem associated with particular students. With the style adopted, our students were clearly successful in the task set. If a modified style leads to even better results, our point is made more strongly still.

In considering questions about different styles, one advantage of our system is that it readily accommodates a wide range of scripts. Any visible script can easily be entered by hand into the computer storage bank and selectively modified as desired. Our approach is, for example, being considered for teaching Chinese characters. In this case allowance is to be made for variations in stroke thickness and for pronunciation of each character's name via computer synthesized speech.

Leaving artistic aspects aside, the ultimate test of efficiency of a given style is the extent to which it facilitates communication between a writer and a reader. (With speedy notetaking these are likely to be the same person.) A set of lettershapes may be inefficient on the grounds that the script is: (i) hard to learn; (ii) slow to execute; and/or (iii) difficult to read.

Any style chosen will give rise to a characteristic set of errors. In empirical research on handwriting error, Newland (1932) found that the most common error was the "*e*-closed" form. If this is still true for current use of commercial cursive, then "hooks" are not the most important matter. As pointed out by Graves (1979), analysis of error patterns in handwriting may be a useful tool for teachers in learning about children's understanding of handwriting. Problems associated with lack of manual ability or practice may be distinguished from problems associated with misconceptions in a child's internalized model of handwriting. We agree that some handwriting errors are promoted by the nature of the alphabet script itself: the reversal of *b* and *d* is one example.

Learning rate and ease of execution for a given script can be examined experimentally. Allowance should be made, however, for Welford's (1976) observation regarding skilled performance that the rate and quality of an individual's output changes according to levels of stress and arousal. Our exploratory study did not extend to Ebsen's case of speedy notetaking.

Ebsen gives an example of connected letters from our model alphabet which can be perceived ambiguously. Such examples are relatively easy to construct with most cursive styles when a small group of letters is taken out of context. There are obvious dangers in trying to evaluate the overall legibility of a script on the basis of such examples. The literature on school writing styles used during this century examines cursive script in the light of so-called "manuscript" and other styles, but is inconclusive as to which is the most beautiful, which is the best for children or adults, and which is the easiest to read. Of course, book-print is easier to read than handwriting, but as Quant (1946) indicates, many researchers make unsubstantiated assumptions about which factors are elements of a legible style.

In evaluating legibility, context is all important. Readers do not notice many potential ambiguities and minor errors because of the intelligent use they make of prediction, based on constraints imposed by syntax, semantics, and each reader's developing model of the writer's style. Another contextual factor to be considered when evaluating overall legibility is the familiarity of writers and readers with the "ideal" script in use in a community. This factor is clearly not subject to laboratory manipulation. Thus, while learning rate and ease of execution for a given style may be examined experimentally, ease of reading is very much dependent on several levels of context. These contextual effects make it very difficult to evaluate the overall efficiency of one style versus another (e.g., "hooks" versus "no hooks").

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A reply from contributor Donald H. Graves

It is difficult to respond to Alf Ebsen's points since he must not have read the chapter providing the context for the children's writing. There was no attempt to pass off Toni's writing as an example of craftsmanship. Rather, it shows what one six-year-old does when she first comes to school. She no longer writes that way today. Whether in speech, reading, or writing, or any other subject area one might choose, children arrive in school with certain understandings or practices. We need to understand the meaning of what they do. In this instance we need to understand speech features that appear in the composing. Understanding does not mean acceptance of such script as cute or quaint. It merely means we understand where the child is and what needs to be done.

Furthermore, Toni is not handicapped, anymore than Ebsen might be if he tried skateboarding for the first time. I suggest that Ebsen pay a visit to the "handicapped" during their first week in school. Don't miss out on the joy of children's explorations with print on paper for the first time.

I want to stress that I support the art of calligraphy. It *is important* for children to take pride in the crafting of their written products. They just don't start off with the forms we may ultimately desire.

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A reply from contributor A. S. Osley

I share Alf Ebsen's surprise that *Visible Language* has neglected handwriting so scandalously for so long. Charles Lehman is to be congratulated for doing something to fill the gap. A disappointing feature of the issue, however, was the absence of vital experience of the coal-face workers: contributors were theorists, administrators, artists, historians, etc.—people operating at one or more removes from the class-room.

Mr Ebsen's statement of reasons why handwriting is important is one of the most wrong-headed declarations that I have seen for a long time. I cannot believe that handwriting has a more special place in the upbringing of children than the ability to read or speak clearly; nor has it "slumbered" for more than 400 years. Though styles have

varied, it has been continuously practised with tolerable success. The complex diplomacy of the eighteenth and nineteenth centuries in Europe, for example, was conducted in readable handwriting. The trouble is that enthusiasts get so emotional about the subject (". . . been into this calligraphy for six months now—it's changed my whole life"). The sooner we stop thinking of handwriting as a mental discipline or a mystical experience, rather than as a piece of equipment for life on the level of riding a bike or being able to swim, the better. Of course, I do not deny that valuable by-products may spring from it.

The picture of handwriting as a means of mass communication in the twentieth century is a mirage. When people advance this thesis, they usually have formal script in mind. But even at that, manuscript has formidable drawbacks. It is tiresome to read in bulk after the novelty of the opening pages; it is most wasteful of paper and space (equivalent to 18-point type); it is difficult to proof-correct; and the number of penmen capable of both making a decent job and regularly meeting a publication deadline is minuscule. Don't ask me to go through *Pickwick Papers, Ulysses, La Recherche du Temps Perdu,* or the *Daily Telegraph* in a "calligraphed" edition, still less a handwritten version.

Manuscript can be used for short texts to save production costs and for the customary menu-cards, wine labels, and wedding invitations, but this is minority stuff. Its widespread adoption would lead to an impoverishment, not an enrichment, of culture.

Handwriting (i.e., informal script) is essentially a tool of personal communication.

The Glade, Brook Road
Wormley, Godalming, England

RIGHTING'S MERROR

Never even noticed the misspellings then:
an old love letter! —I. Takuboku (1885-1912)

Record precisely, collect, classify, exposit
knowledge or performance errors of
omission, intrusion, transposition, [*contraction*]
in graphic, allographic, graphemic & lexical
information perception, encoding, storage, translation.
b/o Andrew W. Ellis, "Slips of the Pen,"
in *Visible Language,* XIII: 3 (1979).

Naked
our misteaks burn—
errortating
scent's abilities,
enterferroring
with commonoccasion:

Eror's an
eraotic merror,
emberrorsing as
our slips strip berr
our cerrless hand—
& mind.

V. H. Flach, 4. VI. 80

Résumés des Articles

Traduction: Fernand Baudin

Les contrastes image-fond, clair-obscur et les retards de lecture *par Olive Meares*

L'auteur cite des exemples d'où il ressort que les contrastes excessifs interviennent pour une grande part dans les retards de lecture chez les enfants. Les résponses et les commentaires des enfants invitent à reconsidérer d'urgence l'impression des livres scolaires. Les réactions à la violence des contrastes peuvent aller de la simple irritation au blocage total devant l'apprentissage de la lecture.

La distribution de l'information visuelle selon l'axe vertical dans les caractères romains et hébrïques *par Joseph Shimron et David Navon*

Les gens d'expression anglaise ou hébraïque peuvent déchiffrer des textes dont les lignes sont plus ou moins mutilées en tête ou en pied. Les lecteurs anglais sont gênés lorsque le sommet des lettres est entamé, tandis que pour les lecteurs hébreux, c'est le contraire. C'est attribuable à la manière différente dont l'information est répartie de part et d'autre de l'axe vertical dans les caractères romains et hébreux. L'auteur fait voir que l'interaction entre l'aire et l'étendue des mutilations suggère que cette différence n'est pas due uniquement aux particularités que présentent les caractères en tête ou en pied.

Le bilinguisme dans les timbres postaux: ou la politique et le graphisme *par Richard E. Wood*

Le timbre-poste est une manifestation particulièrement visible et internationale d'une identité nationale. Dès l'origine, dans les années 1840, il est l'expression d'une politique linguistique. Sur tous les continents les timbres reflètent le bilinguisme officiel: les deux cas les plus frappants et les plus étudiés, la Belgique et le Canada, témoignent d'une lente et difficile évolution partant d'un monolinguisme originel pour aboutir au scrupuleux bilinguisme actuel. Dans le Tiers Monde, la langue officielle a changé ou est restée inchangée selon les cas après l'indépendance. Un nombre croissant de minorité s'expriment par le timbre-poste. Les langues de grande diffusion, principalement l'anglais et le français, sont, elles aussi, adoptées ou rejetées selon les cas. Certains pays choisissent une politique de neutralité linguistique et s'expriment en latin ou en espéranto. Le timbre-poste est un témoin de l'évolution linguistique, de la politique linguistique et de toute réforme linguistique, qu'il met sous les yeux de tous.

Les signes dans l'antiquité égyptienne: un nouvel examen du rapport silhouette-hiéroglyphe *par Jean M. James*

L'auteur s'efforce à son tour de résoudre l'énigme que pose la silhouette humaine qu'utilisaient les anciens égyptiens et conclut qu'il s'agit d'un signe et non d'une représentation naïve ou préhellénique. Son rôle est scripturaire et exprime la fonction grammaticale d'un déterminatif. Les conventions qui en ont fait un hiéroglyphe ont également influencé le dessin des silhouettes ailleurs que dans les inscriptions. A l'origine, la silhouette apparaît soit dans un texte décoratif soit dans un texte hiéroglyphique et non comme une représentation d'activités humaines.

La disposition des textes et leur lecture *par James Hartley*

Frase et Schwartz ont démontré (1979) que la lecture des textes techniques est sensiblement facilitée lorsqu'ils sont découpés selon le sens plutôt que tapés selon un format standard. L'auteur examine le raisonnement et la méthode de Frase et Schwartz; il décrit en outre deux autres expériences qui développent les mêmes données mais selon une méthode différente. Reprenant les données de Frase et Schwartz on a comparé des mises en page standard et des copies dont les alinéas sont rentrés et les textes alignés verticalement. Dans les deux nouvelles expériences aucune différence notable n'est apparue dans les temps de lecture des différentes mises en page. En conclusion, les résultats obtenus et leurs conséquences sont examinés dans une perspective plus ouverte que celle de Frase et Schwartz.

Kurzfassungen der Beiträge

Übersetzung: Dirk Wendt

Figur und Grund, Helligkeitskontrast und Leseschwierigkeiten *von Olive Meares*

Es werden Befunde erwähnt, die darauf hindeuten, daß maximaler Helligkeitskontrast in starkem Maße zu Leseschwierigkeiten bei Kindern an einer Neuseeländischen Lese-Klinik beitrugen. Die Antworten der Kinder auf Fragen und allgemeine Bemerkungen über ihre Wahrnehmung einer gedruckten Seite lassen ein Bedürfnis nach Forschung zur Gestaltung von Kinderbüchern nach Figur- und Grund-Relation und Helligkeitskontrast aufscheinen. Die negativen Auswirkungen von Druck mit maximalen Helligkeitskontrast können von leichter Irritierung bis zu massiven Sperren gegen den Fortschritt des Lesenlernens gehen.

Die Verteilung visueller Information in der Vertikalen bei lateinischen und bei hebräischen Buchstaben *von Joseph Shinron und David Navon*

Versuchspersonen mit englischer und hebräischer Muttersprache lasen Texte, die durch die Entfernung eines breiteren oder schmaleren Streifens am oberen oder unteren Rand der Zeile gestört waren. Während das Lesen des englischen Textes mehr durch die Störung am oberen Zeilenrand beeinträchtigt wurde, fand man das Umgekehrte bei dem hebräischen Text. Dieses Ergebnis wird den unterschiedlichen Arten zugeschrieben, nach denen die Information auf die vertikale Achse bei lateinischen und hebräischen Buchstaben verteilt ist. Wechselwirkungen zwischen Bereich und Breite der gestörten Region werden dahingehend interpretiert, daß der Effekt nicht einfach nur Merkmalen am äußersten unteren oder oberen Ende der Buchstaben zugeschrieben werden kann.

Visible Language Politik—Zweisprachigkeit auf Briefmarken *von Richard E. Wood*

Die Briefmarke ist ein hochgradig sichtbares, international zirkulierendes Symbol nationaler Identität. Seit ihren Anfängen in den 40er Jahren des 19. Jahrhunderts ist sie auch ein Symbol der Sprachpolitik gewesen. Briefmarken aus Ländern aus allen Kontinenten reflektieren offizielle Zweisprachigkeit: die beiden deutlichsten und sorgfältig beobachteten zeitgenössischen Beispiele, Belgien und Kanada, zeigen beide eine langsame, schmerzensreiche geschichtliche Bewegung von ursprünglicher Einsprachigkeit zu der heutigen, zweifelhaften Zweisprachigkeit. In den Nationen der Dritten Welt hat die sprachliche Identität manchmal gewechselt, und ist manchmal seit der Unabhängigkeit geblieben. Die Sprachen von Minoritäten sind in steigendem Maße auf Briefmarken vertreten gewesen. Verbreitetere Sprachen, hauptsächliche Englisch und Französisch, werden von einigen Ländern benutzt, von anderen vermieden. Andere suchen eine politisch neutrale Sprache in Latein oder Esperanto. Briefmarken sind Zeugen von Sprachveränderungen, Sprachpolitik und Sprachreform. In ihnen wird Sprachpolitik sichtbar.

Zeichen im alten Ägypten: Ein weiterer Blick auf die Beziehung zwischen Figur und Hieroglyphe *von Jean M. James*

Dieser Aufsatz stellt einen weiteren Versuch dar, das Rätsel zu lösen, das die besondere Art der Darstellung der menschlichen Figur bei den alten Ägyptern bietet. Er betrachtet die Figur als Zeichen und nicht als Ergebnis einer naiven oder vor-griechischen Form der Darstellung. Die Figur fungiert als Teil einer Inschrift. Sie hat eine Schriftzeichen-Rolle zur Festlegung einer grammatikalischen Funktion. Die Konventionen, die zur Bildung der Figur als Hieroglyphe führten, beeinflußten auch die Art, auf die Figuren gezeichnet wurden, die nicht Teile von Inschriften waren. Die Figur erscheint erstmals entweder in einem Bilder-Text oder als Teil eines hieroglyphischen Textes, aber nicht als Mittel der Darstellung menschlicher Aktivitäten allein.