
Visible Language

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involved in our being literate

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Front cover: An example of late roman cursive discussed by Gunnlaugur Briem.
Back cover: A page from Gerardus Mercator's *Literarum Latinarum*
discussed by A. S. Osley.

This special issue is dedicated to
Dr. Lloyd J. Reynolds and Fr. Edward M. Catich

First, we—that is, everybody—should recognize his own handwriting as an art—amazing art really—to be improved rather than degraded. This partly for its own sake, and also because it is only from a general interest in, and recognition of, art that an improvement in the forms of the things we produce from pots to cities, can spring up. Common interest in the improvement of ordinary writing would be an immense disciplinary force: we might reform the world if we began with our own handwriting, but we certainly shall not unless we begin somewhere.

—W. R. LETHABY

A B C D E F G H I K L M N

EARLY ROMAN CURSIVE, third century B.C. to third century A.D.

284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300

LATE ROMAN CURSIVE, fourth to eighth centuries A.D.

Lady Elizabeth

SECRETARY, thirteenth to nineteenth centuries

L'altro e' acuto et sottile

CHANCERY CURSIVE (*cancellaresca corsiva*), fifteenth to sixteenth centuries

Consolacri fiamis nella vostra poverta'

ITALIAN HAND, seventeenth to nineteenth centuries

A B C D E F abbcdddefo

ENGLISH ROUNDHAND (copperplate), eighteenth century to date

Opportunity Opportunity

AMERICAN BUSINESS HANDS, nineteenth century to date

Aa Bb Cc Dd

COMMERCIAL CURSIVE, twentieth century

Aa Bb Cc

PRINTSCRIPT (manuscript, ball & stick), twentieth century

Italic handwriting

ITALIC, twentieth century

Informal written letter models were developed from personal use of formal models and were characterized by curving lines, simplified forms, regular and symmetrical strokes, ligatures, abbreviations, rapid writing, compressed spacing, and angularity.

Teaching and Learning the Craft of Handwriting

Charles Lehman

Abstract

Handwriting is a traditional craft in its own right with its own criteria of quality. Successful selection of appropriate tools, techniques and letter designs for modern handwriting education requires a collaboration of experienced classroom teachers, educational researchers and traditional craftsmen to share their understanding of the developing psychology of the learner, the historical and modern development of handwriting models and the techniques and materials needed for personal proficiency in performing the craft. The results of such collaboration can be found in writings of some calligraphers and in the instructional programs currently used in some schools.

Handwriting is a craft that must be learned and practiced carefully to be made well. Interest and skill in the learning and continued practice of handwriting depend on sound education. Where education is lacking the learner must depend on imitation and work without understanding; that is a form of drudgery. Handwriting is taught in some fashion to virtually all children, but too often it is presented without appropriate goals by teachers with little self-confidence in their own handwriting ability. "The main obstacle to sound universal education," Robert Bridges has written, "is the lack of competent teachers; very few of those who have to teach handwriting can themselves write well."¹

When faced with the need to teach handwriting, most American teachers of primary grades drill their students in drawing letters assembled from a limited number of "easy-to-imitate" geometric shapes. But pure circles and vertical lines are not easy-to-imitate and have little, if any, value for handwriting. Training students to reproduce geometric shapes is appropriate only if one's primary purpose is to develop the rudiments of perceptual-motor skills. When the goal is to teach handwriting, it makes much more sense to stress simplified rhythmic forms of writing derived from the actual practice of mature skills.

After practicing geometric letterforms (known variously as

printscript or manuscript) for their first two years of school, primary grade students are told in effect, "Stop what you are doing because now you are going to learn *real* handwriting." It soon becomes evident that printscript is an ill-advised developmental stopover. The change to commercial cursive writing that typically occurs at the third grade level is time consuming, traumatic, and eventually leads to deeper frustration. The pseudo-artistic styles of commercial cursive present a radical change for students trained to write printscript. Instead of circles and stick-like strokes that combine into letters, the writer encounters outsized ascenders and descenders, extreme letter slope, intricate joining maneuvers which require backstroking, and the requirement that the writer use a continuous writing line to form words. Students feel an obvious need to abandon printscript for some form of cursive writing, but even after years of practice their writing of commercial cursive is accident-prone and tends to break down under the pressure of everyday, rapid use. While teachers may not approve of the handwriting their students produce with these commonly taught forms, they cannot improve the results unless they understand and practice handwriting as a craft themselves.

Successful selection of appropriate tools, techniques, and letter designs for handwriting education requires a collaboration of experienced classroom teachers, educational researchers, and traditional craftsmen to share their understanding of the developing psychology of the learner, the historical and modern development of handwriting models, and the techniques and materials needed for personal proficiency in performing the craft. Just as the craftsman's competence grows out of personal experience with writing movement—getting the swing of it—competence in teaching writing grows out of an appreciation for the principles that guide the craft and for the central role that it plays in the students' development of all language arts. Competence in teaching handwriting begins with getting the idea of what must be done to guide the student to understand and then perform rhythmic writing through careful practice.

In simplest terms, handwriting is a form of rhythmic drawing—with literary meanings. The drawings (letters and words) are a silent language of movements; rhythmic patterns trace thought and allow a writer to touch ideas as they become visible on the

page and palpable in the movement of his fingertips. Alfred Fairbank has suggested that handwriting is "a system of movement involving touch and non-touch,"² implying that the dance of the pen is not spontaneous, undisciplined movement, but rather choreographed design involving the pulsing, rhythmic flow of touch and a controlled interval of non-touch. Unlike the plus/minus of a computer, the momentary non-touch of fluent handwriting is more akin to a slight change of pitch in music. The hand of the writer is poised in movement throughout the act of writing—contracting and relaxing, but always in fluid motion.

The various language skills used to produce and receive language all find support in handwriting. If reading is essentially decoding, handwriting is encoding; if composition is the communicating of ideas in an orderly way, handwriting lends a rhythmic stride to the whole process—mental organization, the act of writing, and the visual product; if spelling is arranging letters in an accepted sequence for the communicating of a word, handwriting is the physical act of doing it as well as the ordinary application of spelling skills. Frank Freeman has pointed out that, "The aim of spelling is to enable the child to write words correctly, and writing words is the basic means of learning to spell them."

Excellence in using these various language skills, particularly handwriting, depends on a smooth sensory-integration process. All senses affect each other in the experiences of the person. This means that a fluent skill of handwriting serves a student's reading ability as well as his need to pour out ideas in a visible written form. But just as a lecturer or reader will occasionally roar through a piece too rapidly for us to absorb what is said, too often a writer neglects to orchestrate the visual word for all the senses of the reader. Making handwriting easy to read should go beyond mere legibility (certainty of decipherment). It implies an orderliness of parts and an enthusiastic, appealing pattern for the eye to *feel*. Letter slope must be harmonized, spacing made to appear equal; letter sizes must be proportionate and the shapes of the letters consistently produced according to a universally agreeable set of designs (and some kinds of designs are clearly more efficient than others for these purposes). Most importantly, if handwriting is to be readable it must feature letter models with an underlying rhythmic flow, made with systematic, proportioned movements that are graceful and natural both to the hand and to the eye as

well as consistent and simplified for safe performance within the range of velocity used to produce everyday writing.

To preserve such letterforms, joining practices must be developed that serve the eye of the reader with accident-free forms as well as the need of the hand of the writer for greater speed. Certain letterforms do not lend themselves to rapid joining or, for that matter, to joining of any kind. In general, writing degenerates under the pressure of excessive speed and, at a certain point when enough critical visual cues are taken away or confused with clutter, the letterforms become illegible.

Scribes and notaries of Western civilization have nurtured these standards of ordinary handwriting as basic principles of their craft for over two thousand years, defining various levels of performance up to the art form of their professional calligraphy. The ancient principles and practices of their work constitute ordinary handwriting as a craft in its own right with its own criteria of quality for making modern writing.

These same traditions extend through our own time as a visible foundation not only for the lettering work of studio-based scribes but also for the handwriting instruction of children. The practical responsibility for transmitting the body of handwriting practices and customs to young students now belongs to the classroom teachers in elementary schools. The fact that immense numbers of students are involved—everyone has a right to literacy—creates unique opportunities as well as demands. When properly prepared through scholarship and personal experience with writing, teachers are in a position to test and renew the ideas of the craft of handwriting and to assure their survival by giving them to students as a lifetime skill.

In broad terms, articles selected for this special issue of *Visible Language*—Teaching and Learning the Craft of Handwriting—contribute original, expert development of ideas that are pivotal in our understanding of the field of study itself and in the specific preparation of teachers who must pull these ideas into a coherent, teachable syllabus. All of the authors are active teachers or artisans. Their complementary styles of knowing—analytic and intuitive—are evident in their scientific and artistic investigations. But neither educator nor artist limits their understanding to those things that can be proved by numbers; together they balance visual

and statistical documentation of the mental, emotional, and physical skill required for handwriting. It is hoped that this hybrid scholarship will help restore handwriting to a rich experimental ground of research nourished with the perennial methods and characteristics of writing found throughout the history of Western civilization. The sequence of articles begins naturally with studies concerning the student, the subject who will learn and practice the craft.

Donald Graves deals with fundamental perceptual operations and patterns of development expressed in young children's written compositions. The space of the student's page is invaded with energy of bullish crayon drawings or brilliant watercolors that boldly express emotion and fill the page with visual noise. Written words form together imaginatively just as the child speaks. The artwork is a "rehearsal for the text." At first the space arrangement of the words ignores word order, separation, and page placement—just as elements of the child's drawing often appear in random order. Later on the student relies on prosodic tactics such as exclamation points or interjections to dramatize an idea. Children enjoy the touching and movement of writing for its own sake, but also because the patterns they create are part of the adult world. Enjoyment of the tactile-kinesthetic aspect of handwriting should continue to appear as a vital quality of mature writing. Ideally the writing of older students will dance with refined joy.

Audio-visual materials can be of immense help to the learner trying to grasp fine details of handwriting. As handwriting is a system of movement, it is best taught with media that demonstrate the principle of motion as a progressive action. Alfred Fairbank established the idea in 1949: "The cinematograph can show the pen's motions as well as its track, and so future handwriting reformers may have more impressive means of teaching handwriting than by copybooks, which are often offset by the teacher's writing on the blackboard. Loop films showing the action of writing and repeated as often as required would teach the movements producing the shapes and prove a new and valuable visual aid."³ Iain Macleod and Peter Procter report on a technical innovation that uses lines of light created on a computer viewing screen to simulate writing movements which has proved useful for training handicapped students. The student is "gently but insistently" guided to conformity by means of "a dynamic specification for the creation

of cursive script.” In other words, the student writes with an electronic pen across a computer viewing screen, triggering a path of light that flashes so quickly behind the movement of the pen that it appears to be a written stroke from the pen. Unlike the student who merely observes a performance of writing recorded on film, the student writing with the computer-pen actually participates in the writing process. By requiring the writer to perform “the required sequence of strokes in the specified order and direction within a preset accuracy” and by reacting with visual cues to the success or failure of the performance, the program encourages essential skills of pattern making through writing *meaningful* letters and words.

Whether the instrument for writing triggers a track of computer-light or trails ink from its own body, it is apparent that the design characteristics of writing instruments, particularly the capacity for storing and delivering ink through a nib, determine how the writer will grip and move the tool and how it will adapt to a writing surface at a given rate of speed required for any particular letter model. Referring to the ancient, broad-edged nib used for over fifteen centuries, Edward Johnston has commented, “The most notable and perhaps the most important virtue of the formal pen is that it has been the historic letter-making instrument, having practically created the innumerable types of lower-case from the stylus-made skeleton ‘scribbled’ form of the first to the third century.”⁴

Used correctly, a well-made pen extends the writer to the writing surface within the responsiveness and sensitivity of a sixth finger on the writing hand. But what marriage of material specifications creates the ideal medium? What pen design is best suited for creating designed movement on a writing surface? Chris Rhodes presents a manufacturer’s rationale for the design criteria of a pen. He examines the function of each essential aspect of a mass-produced pen—the nib, the ink storage and delivery system, and the barrel. The revolutionary technology of modern ballpoint and fiber-tip pens make it possible, for example, to write without interruption of movement in any direction and for long uninterrupted periods of time. This has major implications for letter models; the writer now has unlimited choice of stroke direction, velocity, and duration. This development can be interpreted as either a blessing or as a curse. Does it eliminate the need for disciplined systematic move-

ment? Or is it a blessing to handwriting model design because it suggests a modern marriage of the pointed writing tool with appropriate techniques and movements for designs?

Gunnlaugur S. E. Briem suggests that we consider late roman cursive handwriting as the historical credential needed for a new approach to handwriting based on the capability of the modern pointed pen to write freely in any direction. Late roman cursive models were written with a pointed pen and featured a free-wheeling quality of inventiveness. The historic models as such are not proposed for use in the classroom; only their characteristic principle of free movement is offered for interpretation and the development of modern forms.

Nicolette Gray offers a companion report citing efforts leading up to the first use of the late roman cursive models in British schools. Both a lettering artist and an educator, Gray worked in collaboration with Prue Wallis-Myers to develop materials for schools. Rejecting modern typographic models (printscript) and models developed historically for formal purposes (commercial cursive), she suggests speed, legibility, and enjoyment as the best criteria for development of a useful contemporary model; the adult version must be sufficiently flexible to allow for individual expression. Sample illustrations of the all-direction writing with contemporary pens project a free-flowing interpretative rendering of current models, with strokes running diagonally and vertically as counter-checks to the usual horizontal thrust of the writing. Briem and Gray present a thorough case for the all-direction approach to writing. The authors compel us to think anew about the selection and use of handwriting models: Which criteria are the most important? What evidence must be weighed? Other contemporary craftsmen and educators insist that simplified, regular patterning of closely spaced clusters of letterforms are a necessary feature of handwriting.

Present use of the roman letterform for typefaces and its slanted version for cursive handwriting is a powerful reality—the universal visual format of our culture that dominates the printing arts and literacy education. The Renaissance masters responsible for development and refinement of the historic predecessor of one handwriting model used today, known then as *cancellaresca corsiva* and now simply as “italic,” shared certain agreements about cursive writing that reflect a common way of thinking.

Arthur Osley provides reference to the decisions of several leading masters regarding their principles of writing and recommendations for learning the craft.

It can be argued that the designs for letter models developed by the Renaissance writing masters were not essentially dependent on the tool used to write them. Good letterform neither floats in the ink bottle nor drips from the end of the pen. It must be designed by the writer. The late Father Edward Catich suggested that "Ideal letters are the formal exemplars of calligraphy, the mental prototypes that act as the patterns for external letters. They are neither 'sans-serif' nor 'skeleton' letters. They are the nearest approach that we have to a calligraphic universal. Being universal, they exist only in the mind. All the varieties of roman majuscules made by the calligrapher—though differing one from another in outward appearance by such accidents as contrast, writing tool used, stem-weight, size, color, slant, and purpose—have this 'ideal' letter as the common root."⁵ Osley notes that the Renaissance expression of the ideal, the italic script, "had the advantage of being compact, fast, and legible." If the edged pen used to create the historic italic hand has been overtaken by modern pointed pens, we must ask also whether the principles and practices of master craftsmen can be restated in simplified modern cursive designs created with the new writing tools of our time.

After exploring the developmental psychology of handwriting and the synthesis of pen, technique, and model in the process of writing, one final topic remains: how best to implement the new knowledge and skill as an organized program of instruction in schools. Because college and university programs offer only superficial instruction to teachers in handwriting, school districts often have to develop their own training programs which emphasize realistic criteria. For example: Does the inservice program present essential instructions to teachers in an organized manner and in a reasonable time? Does the program relate to current classroom practices? Can the inservice be repeated for other teachers without exceptional costs? Does the program include a clear statement of desired educational goals? Is some provision made for evaluation of student performance? Does the program offer the option of extended study for teachers? What do other districts say about the program?

A major city school system has successfully implemented such a program by calling for teachers to teach their colleagues. By training a select cadre to serve as grassroots experts, the administration of the Glasgow schools created a creditable, sustaining resource to aid other teachers. A worthwhile model for learning handwriting is valued by teachers as well as by students. Like their students, teachers seem to learn more by watching other teachers than from the printed sample.⁶

One classic description of craftwork prescribes a sharing of skills as a climax to learning—a final act necessary to mastery. Amateur calligraphers and other graphic artists fulfill this important personal goal and an important need of education in direct training of teachers. Essentially they model and celebrate the beauty of their craft through their own workmanship, which presumes all of the skills needed by teachers for their classwork. No other scribe has ever shared as generously or fulfilled the role of writing master more perfectly than the late Lloyd J. Reynolds. The following excerpt is taken from his final essay, "The Decline of Materialism,"⁷ which was concluded only a few days before his death on October 4, 1978. The words illuminate the gentle, effortless confidence of a person who loved what he did and was a master of it. The words also provide another model for teachers of the natural cultural unity of traditional craftwork and modern education. Even more, the personal experience of the craft is presented as a spiritual counsel, a way of life for the learner.

"This paper is being written with the attitude similar to that of the old-fashioned eighteenth century 'philosophe,' a specialist who is also fascinated with ideas in all fields and with searching for the truth. My specialty is handwriting, both formal and informal, and the design of broadsides and books. I am especially interested in promoting the teaching of italic cursive script to the more than forty-four million American children in public primary and secondary school. The commercial cursive now generally taught—if the schools give any attention to handwriting skills at all—is a hindrance. By the time many students are in the seventh grade, the teachers cannot read their illegible scrawls.

"The irresponsible statement that handwriting is obsolete ignores the fact that during the twelve years those forty-four million and more students are in school, they must take notes and write

examinations in longhand. Many lack typewriters and must do their papers and reports by hand. College students suffer the same difficulties.

"But what can be spiritual about handwriting? In ancient China and in modern Japan still, the arts and crafts were and are taught as *Taos* or *Dōs*, religious 'ways' or skills. In medieval Europe the apprentices were given spiritual training in the crafts, which were called 'The Minor Mysteries.'

"In teaching the italic script, it is best if the teacher understands writing the way professional scribes and sign painters have in both ancient and modern times. They are interested mainly, not in what appears on the paper, but rather in the quality of touch and movement which produced the letter forms. Chinese and Japanese critics, in discussing the work of a master calligrapher, consider the changes in the pressure of the brush on the paper, changes in speed of movement, the movement of the hand and arm in designing the character, and the like.

"Alfred Fairbank, the modernizer of the Italian Renaissance cursive we call italic, defines handwriting as a system of movements involving touch—and sometimes non-touch, the continued movement when the pen is lifted between letters and between words. He also calls it a dance of the pen. As with the Chinese and Japanese, the attention is not on what appears on the paper.

"American telegraphers wrote down the messages that came in. They praised a colleague for having 'a good fist.' Show-card writers and sign painters adopted the phrase and as always the attention is given the skill in the writer's hand and arm rather than the static form seen on the paper.

"In our schools the emphasis is on the visual letter produced by eye and hand coordination. The tradition of professionals would indicate that the emphasis in teaching should also be on writing as an action rather than as a result, a thing. It would be logical then to use tracing occasionally rather than only copying.

"The purpose of the tracing is to 'get the letter in his hand' as soon as possible. Little verbal discussion or guidance by the eye is used at first. When he has the twenty-six letters 'in his fist' to a rather satisfactory degree he is then ready to do more detailed study of the letterforms. The importance of this first stage is that he has been studying—and we hope learning—two very important fundamentals. He has learned something of meditation by using

one-pointed concentration on the sensations of touch and movement. Analytic rationalism and visual policing of the hand by the eye are reduced to a minimum. He has the alphabet when he can write it with his eyes closed. He is then ready to refine the designs. He learns that he can trust his hand in the more advanced work.

"It is interesting that in China masters of calligraphy would trace one another's work as well as the writings of famous ancient scribes. Visual and rational analyses were not adequate. They learned the experience of touch and movement by tracing. This emphasis on the action of writing is a more spiritual approach than concentrating on the thing on paper."

1. S.P.E. Tract No. XXIII, 1926, E2.

2. This famous definition of handwriting is only one of several created by Fairbank. It appears in *A Book of Scripts*, Penguin Books, Baltimore, 1968; The final words "... and non-touch" were added to the published definition in personal correspondence with the author.

3. *Ibid.*, p. 28.

4. Edward Johnston, *Formal Penmanship*, Lund Humphries, London, 1971, p. 72.

5. Father Edward Catich, *Reed, Pen & Brush Alphabets for Writing and Lettering*, The Catfish Press, Davenport, Iowa, 1972, p. 1.

Edward Johnston added another comment on the subject in *Formal Penmanship*, p. 98: "As we have seen, the letter form or pattern which the penman has to follow may already exist on paper, or more or less completely in the penman's mind as an idea, or it may be a pattern in part seen, in part thought, and in part wrought in the very act of writing it."

6. For further information concerning this major accomplishment, write to Norman Henderson, Adviser in Primary Education, Dundas Vale Teachers' Centre, 6 New City Road, Glasgow G4 9JR, Scotland. At last report, over 90 of the Glasgow teachers have made the classroom conversion to the new program.

7. Lloyd Reynolds, *The Decline of Materialism*, The Alcuin Press, Portland, Oregon, 1978. This small book is only available from the Western American Branch of the Society for Italic Handwriting (Secretary, 6800 S.E. 32nd, Portland, OR 97202). Softbound \$4.

*Let Children Show Us How
to Help Them Write*

Donald H. Graves

Abstract

Preliminary findings are presented from a current two-year NIE case study observing the development of primary children's composing, spelling, and motor behaviors during the writing process. Handwriting is influenced by all phases of the writing process and problems unique to different stages of the writer's development. Children's earliest efforts at writing resemble their speech habits in their lack of organization. Later, when children choose their own writing topics, the language for expression, and written format, the compositions become more successful. Handwriting is one component of writing that illustrates the nature of children's decision making processes. Teachers attempt to guide the children's craft to greater clarity in drawing letters, word order, word separation, page placement, and later, in re-writing and use of prosodic techniques.

Six-year-old Toni and Jennifer paint side by side as they stand at their easels. "I'm goin' to fill this one all in with red," says Toni, as she points to the outline of a house with the tip of her brush. When Toni speaks, she sprays her words in many directions as she paints and glances around the room at the same time. She knows that Jennifer can hear and understand her words without sending them in a specific direction.

Fifteen minutes later Toni is seated in the writing area. She writes ("I love super owl and I kiss him").

Words go up, down, or across for beginning writers like Toni. Toni has been writing for two weeks and does not know yet that written words, unlike spoken words, must conform to space, have a set direction, and have specific beginnings and endings.

Toni wants to write about "super owl." Even though she is just learning how to control the pencil and use space on the paper, it is the urge to tell that makes her write from 250 to 300 words per week without specific assignment. Toni writes this much because she controls the topic, spelling, and the process of discovering how to get her message down on paper.

AND
I
KISS
HIM

I Love Super Owl

When we let children like Toni show us their process of writing, we let them show us how to teach them. Best of all, they show us the energy source that made them write in the first place. When children do the pushing, they have control. Child control in this study is defined as child initiative. Children choose their topics, language inventions, discover space on the paper; and teachers follow, observing, solving problems with them, in order to steer their craft into greater clarity.

When children are given control of the writing process, teachers need information to know what they see, to sense the significance of different child struggles. Children's handwriting is one place where the struggle shows. But the handwriting is only one component of the writing process. Handwriting is more than the mere formation of letters on a page at one moment in time. It is influenced by all phases of the writing process, children's changes from speaking to writing, and problems unique to different stages of a writer's development.

This paper will take a broad view of handwriting. It will seek to explain handwriting performance in the midst of child development and the writing process. The information has come from preliminary findings in our study—A Two-Year Case Study Observing the Development of Primary Children's Composing, Spelling, and Motor Behaviors During the Writing Process, funded by the National Institute of Education.

Through this grant from NIE, we are following twenty children over a two-year period. Each day three full-time researchers are with the children, carefully recording data as the children compose. Composing is broadly viewed from the child's drawing, painting, working with crayons, pens, pencils, to the composing of first, second, and third drafts. The data come from collections of all forms of composing, direct observation of the child writing, and video tapes made during the composing process.

This in-depth study of children's composing is not a controlled design. Rather, it is a case study of twenty children—in grades one and three—who were chosen because of their *differences* on a pre-selected developmental composing scale. The study seeks to describe in detail the “what” of composing in order to explain the “why” of child behaviors during the writing process.

Children have a strong urge to write. They like to see their own scratches and marks everywhere: hearths, bedroom mouldings, bathroom walls, moist windowpanes, paper bags, old envelopes, and sidewalks. They want to be seen and heard.

Speech comes before writing. Since they are both communications—and speech comes first—it is only natural that writing should bear the imprint of speech. Children try to make writing like speech, but early attempts to make them the same lead to crude messages and script that is often unintelligible to both writer and reader. Speech and writing simply are not the same. Only advanced writers can make writing sound like speech.

Children do not need to be aware of the process of crossing over from speech to print. They don't need to be aware of the steps of learning to write any more than they needed to be aware of learning to speak. Children are so delightfully self-centered that their high assumptions about message quality provide a natural cloak of protection for both problem solving and experimentation. Remove this cloak and the child suddenly becomes unnaturally aware of the rigors and demands of the writing process. Their urge to write is relentless enough for parents and teachers to just let it happen. Their role is to sense the child's intentions, note what aspects of transition stand in the way, and then provide help.

The data here show children's changes from speech to print. The data are reported in four sections starting with drawing, since drawing and writing are much the same for children. Next come

child discoveries of word order, separation, and page placement. Then, when redrafting appears, new uses of space and handwriting are reviewed. Finally, the significance of child use of prosodics in speech and print are discussed. In each section, examples of child behavior have been chosen from a large body of data to illustrate common child practices.

Drawing

Toni drew before she wrote, “I love super owl and I kiss him.” When Toni drew, she chose the subject and gained control of the information as she sketched in the figure of a flying owl. As Toni drew she supplied the energy and information for her teacher to help her with the writing. Drawing is the driving force behind much of Toni's writing. It serves as a rehearsal for the text as well as an important bridge from speech to print.

Toni needed to draw because the drawing helped her know what to write. Teachers will see beginning writers like Toni draw before they write if they give them the right paper. The right paper has a large space at the top where children can draw, or at least is plain, unlined paper with large enough space to permit both drawing and writing.

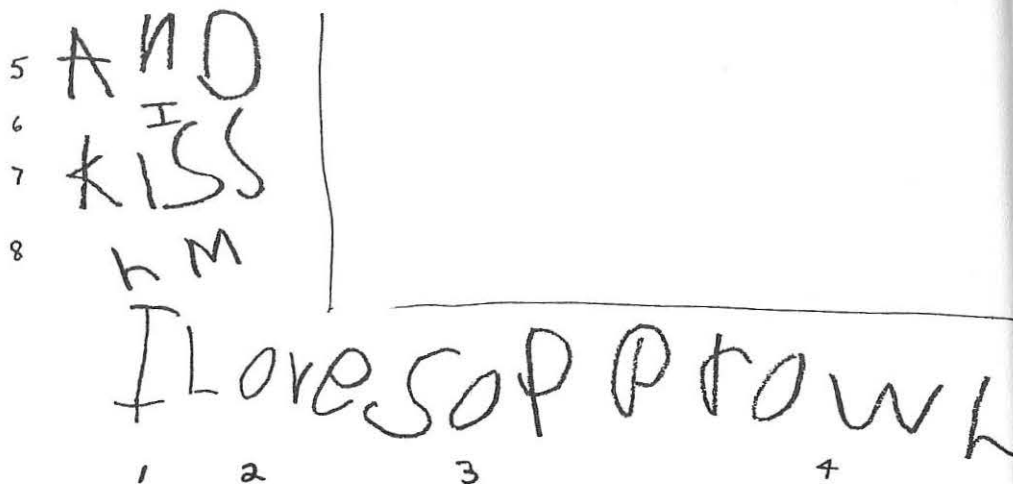
Teachers can find out for themselves what drawing does for writing. Ask children before they draw, “Tell me, what will you write after you finish drawing?” If drawing is important, they do not usually know what they will write until they draw. On the other hand, when the drawing is completed and the teacher says, “Now tell me what you will write,” she will get a more specific statement about what the child will write.

Drawing helps children change from speech to print. When John is seated next to Fred in a sandbox pushing mounds of sand with his bulldozer to make a fort, Fred knows what John means when he says, “This is gonna keep out the bad guys.” Fred can see what John means because the situation tells him. But when John writes, he must supply words to describe the situation in which the message will fall. If John can draw before he writes, he creates the setting for his print, thus helping both himself and the child who will read his paper.

When children control their subjects, they write more, gain greater practice in writing, and ultimately care much more about

the appearance of their letters on the page. For the beginning writer, drawing is one important means of maintaining that control.

When Toni first drew figures of people, they were large, turned on their sides, and occupied different parts of the paper. She was learning proportion, control of the instrument, and how to use space contained in the paper. Toni continues to discover space when she writes. Note again Toni's message about "super owl" ("I love super owl and I kiss him"):



Space

In this instance, words flow from left to right (1-4) as well as from the top down (5-8). On other occasions, Toni will send a column up from the right hand side of the page, just as in this instance, she came down from the top of the left side. Toni generally understands that words go from left to right as shown in steps 1-4. But she has a dilemma. Step 4 falls in the lower right hand side of the paper. She has run out of space. It is hard for children to predict with accuracy where the full message will end. Since there is a drawing on the page, the message needs to go with the illustration. She solves the problem by coming down to the line on the left side. Adults may consider this a major problem. It is not to Toni. She knows the meaning of the message; at this point in her development she is satisfied with just the placement of message ingredients

on the paper. She assumes that if she knows the message, others will know as well, regardless of a lack of left to right order.

Toni writes as she speaks when words run together in steps 1-4. Words run together without spaces in between. When Toni read this selection, her voice rose and fell just as the words undulated across the page. Toni's intention to simulate speech seemed almost deliberate since her addition of steps 5-8 shows her knowledge of word units.

Six-year-old John wrote, "Ste fosd," for Steve Austin. John was trying to tell where one word ended and the other began. For John, words in speech flow together like "hamaneggs." All children at some stage in their writing must go through the process of separating words from speech into discrete units.

Further Adjustments to Space Problems

About the time young children develop good letter formation, with a left to right flow and spaces between words, new problems of space arise. The problems are caused by new information, the beginning of redrafting. The discovery of new information without any place to put it can come as early as six years of age. Six-year-old Chris had just read a book about prehistoric animals and was composing one of his own to share with the children. Chris and his teacher had this dialogue:

Teacher: I see that you were able to put in the word "may" to show that "Brontosaurus may travel in families." [Chris had been able to sandwich in the small word without erasing.] But you didn't say why they travel in families.

Chris: They travel in families to protect the young.

Teacher: Do you think that is important information?

Chris: Yes, but there isn't any place to put it. [The writing goes from left to right over to the right hand margin at the bottom of the paper. Above this writing is a picture of a brontosaurus.]

Teacher: Look the paper over and show me where you could write it in.

Chris: There isn't any [voice rising].

Teacher: Look the *entire* paper over and put your hand on any space where there isn't writing or drawing. [There is space above the drawing.]

Chris: Well, I could put it up here [motions to top of the paper] but it would look stupid. The other part is down here.

Teacher: How could you show they were connected?

Chris: I could put an arrow down here pointing to the part that's at the top.

Teacher: Good, but you'll need to connect the arrow with the top. This is what writers do when they are getting their books ready for the publisher.

Chris knew additional information would create a mess. His usual approach was to erase words to put new ones in. Now his teacher had shown him how to control new information when there is a problem of space. She had also shown him that this draft is temporary, that a rewriting is necessary. Young writers need to learn a whole repertoire for messing up their paper to deal with new information, organizations, and adjustments. This also adds to the importance of crafting the letters in the final draft. If children have controlled the process, know their information is good, the quality of their handwriting improves.

Just as children learn the appropriate use of language within the family, the playground, or school, they need to learn the context of various kinds of handwriting and different uses of space. Most handwriting texts do not deal with the appropriateness of handwriting in context. Rough draft handwriting is not the same as handwriting in final draft form. Children who are preoccupied with word shape or correct spelling in an early draft lose control of the draft and their information suffers.

Children show us in their handwriting when they take on the draft concept. Eight-year-old Andrea, like many writers, hoped her first draft would be her last. About the sixth word into this selection, her handwriting shows that she decided another draft would follow:

Learning to fly
Once when I was very little I got a
hand to fly so I tried jumping
of things and tried to float up
and across I tried and
tried til my father made me
and my sister big cardboard
butter fly... wings.

Later, Andrea went on to draw arrows, cross out lines, until the message was shaped to her liking. Handwriting, in final draft, properly dealt with the aesthetics and etiquette necessary for good communication.

Prosodic Features Show Us Children Are in Control

Eight-year-old Scott did not like to write. He wrote at four words per minute with no spacing and over 45 percent of his words were misspelled. Letters were of various sizes, ran together, and were poorly formed. In October Scott's writing looked like this:

I was Divn in the Serwola and as an
to cars crashing and I am crashing not into
them but I turned down way and then I turned

Since October Scott has been required to write but with this difference: he controls the topic, information, and language. He also gets help from two audiences: the teacher and other children. Help comes principally at the point of clarifying Scott's understanding of the information and the appropriateness of the meaning he wants. Help comes in early drafts, then Scott rewrites for final copy. Two months later Scott's writing looked like this:

Scott showed that he had re-entered the writing process on his own terms through speech features marked in the written text. Children try to "speak" through their texts when they feel they have control. The elements that show this kind of involvement are called prosodic features. The use of these features put sound, stress, pause, and intonation back into writing. Toni showed her use of prosodic features when she made important words large and her words undulated across the page as in the rise and fall of speech patterns. Scott, along with other children striving for "sound," show early voice through:

I was going down the stairs and
I took two steps and!! Then I slipped
and fell down fifteen steps on my back.
Ow yikes then on the last step I
went boom!! I was aching and I was
in pain. Then I said I am never going
to go down those stairs unless I have to. And
my brother said, "Well if you had on your shoes
it wouldn't have happened." And I said Shutup.

Use of capitals. Important words, especially nouns that carry major meaning, are written in capital letters. Other words may have a single capital letter at the beginning.

Rewritten words. Words or letters that mark key points will be run over several times with the pen or pencil. Words blackened more than others show points of emphasis from speech.

Exclamation points and interjections also put sound back into written language. When children first discover them, their delight in simulating sound leads to the excessive use of these prosodic features. For example, sentences of minor importance receive one exclamation point, whereas those of greater importance receive from two to four. The loudest and breathiest of all receives a large, blackened exclamation point that takes up two lines on the vertical.

Six-year-old Jenny needs to produce sound as she writes. It is her method of developing a voice, staying oriented in space, producing the right sound and symbol, as well as in maintaining control of the writing process. Through a very sensitive microphone tied in with a video recorder, the data show that Jenny's writing contains a high ratio of sound to written symbol, thus marking more clearly how much oral language must accompany

Figure 1. The relationship of sound to written symbol in Jenny's message: "All of the reindeer loved them," written as "Loll ave the reindrer love em."

LINE 1:
Track I: l all, all, of, all of the, the, the, all of the reindeer
 (sounded) s
Track II: L oll ave the
 (written)

LINE 2:
Track I: rein, ruh, rein loved them, all, of, them, the, muh, muh
 (sounded) S S S
Track II: R iendeer love e m
 (written)

writing for her to make an effective transition from speech to print. A sample of the data in Figure 1 shows a typical ratio for both Jenny and other writers at this stage of development. Track I shows Jenny's sound and Track II shows at what point the letter was written in relation to the sound on Track I. For example, in line 1, Jenny sounded an "l," said "all" and wrote an L.

Children hear themselves say what they mean and go on. Therefore, they speak along with the writing and the speaking is an essential part in the composing. Transcriptions from other beginning writers show a wide range of voicing types. Thus far we have classified these voicing patterns:

<i>Type of Language</i>	<i>Example</i>
1. Says the message <i>before</i> it is written.	"The boy will go."
2. Says the word <i>before</i> it is written.	"boy"
3. Says the word <i>after</i> it is written.	"boy"
4. Rereads message <i>after</i> it is written.	"The boy will go."
5. Makes sounds of letter components.	"buh, buh, oi, oi"
6. Says letter names for spelling	"b-o-y"
7. Procedural statements:	"I haven't got any more room."
8. Statements to other children.	"This boy is goin' to blow the bad guys up."

With the exception of statements to other children, voicing is only intended for the child who is composing. A person standing nearby is unaware of most of the sounding, since only the sensitive microphone can pick up these data.

Summary

Children need to control their own writing. But they can't do it alone. Teachers need to help them maintain control because when they are successful, children see themselves as important learners with things to say. Furthermore, when children control the writing process, they write far beyond traditional expectations, spell better, and take pride in the craft of handwriting.

It isn't easy to help children control their own writing. Teachers need information to know when and how to help. Preliminary research from this study of children's composing shows that handwriting is a critical index for showing where to begin to help children.

When children first write, they treat writing as speech. They draw to supply context for the subject, run words together, spell words as they sound, let words run around the page, speak out loud when they write, blacken in letters, use capitals and exclamation points liberally.

Redrafting demands a new view of space and aesthetics. Just when the child has solved early problems of space, new information demands different help from the teacher. But this new step is a boon to good handwriting. When the craft of handwriting follows the crafting of the child's *own information*, a greater level of excellence in final copy is achieved.

Today Toni isn't bothered when her words run together or down the side of the page. Tomorrow she will be. She will need to see another way to handle the problem. Her teacher will need to know how to help Toni. Good teachers see these disturbances, and ask timely questions to show children how to solve problems for themselves. They ask good questions because they know how children learn to write.

A Dynamic Approach to Teaching Handwriting Skills

Iain Macleod
and Peter Procter

Abstract

A computer-based system for teaching handwriting skills has been developed, using a graphic display screen and a hand-held "pen." The system is such that exercises can be completed only by executing the required sequence of strokes in the specified order and direction and within a preset accuracy. In the simplest presentation, a thin guideline is displayed for each stroke in turn. The computer responds to correct pen movements by leaving a thicker track behind. Incorrect pen movements are ignored and a blinking spot calls attention to the point where the pen should be. The resultant visual pattern is the teacher's well-formed example rather than the student's actual strokes, thus reinforcing the appearance of the desired result rather than the student's possibly ill-formed attempts. The system emphasizes the process used in creating cursive writing as well as the appearance of the product and, in one application, has been used to teach fluent signatures to intellectually handicapped students.

The process used to create cursive script has subtle yet profound effects on the appearance of the product. A computer-based system which gently but insistently fosters conformity to a dynamic specification for the creation of cursive script has been developed at The Woden School in Canberra as part of a collaborative project with The Australian National University Department of Engineering Physics. An overview of earlier work in this project which concerns the application of computer techniques to assessment and development of basic skills in intellectually handicapped children is given by Macleod and Overheu (1977).

Many aspects of presentability need to be considered for handicapped students seeking open employment. As they enter the adult workforce it becomes necessary for them to fill out job applications and to sign various documents (such as pay receipts). It is especially desirable to be able to sign in cursive writing rather than printing. There are, unfortunately, many students who cannot sign their names in an acceptable manner and who thus reduce their chances of obtaining open employment (even when ability to write is not a prerequisite skill).

The main problems observed when students were trying to sign their names were:

Poor fine motor control resulted in shaky and angular letterforms instead of smooth curves and well-defined cusps.

Failure to perceive and/or correctly reproduce spatial relationships between different parts of letters led to distorted shapes.

Incorrect stroke sequences and/or directions led to a progressive deterioration from the model.

Difficulty with connection of letters to each other adversely affected both the appearance and flow of writing.

A small computer installed at The Woden School has a DIGIVUE graphic display screen on which lines, text, and other material can be displayed. Associated with this screen is a hand-held "pen," the position of which can be determined by the computer. An exploratory study was made to see if appropriate use of these devices might enable students to learn a fluent signature where other approaches were proving unsatisfactory.

A specific objective of the study was that, following instruction using computing techniques, students would be able to write their names in cursive handwriting with a ballpoint pen on ordinary paper. The style and sequence of strokes in each signature were to follow that presented in a model. To be examined were: the type of computer and educational programs to bring about this change, the success of transfer from the display screen to pen and paper, and student reaction to the program and the computer devices (which in turn might lead to further modification). Because of the exploratory nature of the study, the limited number of suitable students available, and the highly individual nature of their problems, only a limited evaluation of effectiveness was made. A more rigorous evaluation drawing on students from a larger population is planned, using the techniques described below (Geffen, 1978).

Students in the Exploratory Study

Three students who could not sign their names satisfactorily were used as subjects. They all had a history of difficulty with school work and their handwriting was only one aspect of this. Only one or two fifteen-minute sessions per week were given, which allowed the subjects to manage their school and work programs without undue interruption. Instruction was to continue until satisfactory

signatures could be produced or it was clear that no significant progress was being made.

Mark (fourteen years) was able to read and was relatively prolific, if disjointed, in his written output. He could print his whole name in manuscript, but the letterforms and interconnections were in what appeared to be a variety of teacher-taught and self-developed styles. His handwriting had been particularly resistant to teacher-initiated change over the preceding two years. Individual lessons using accepted techniques—such as direct copying from samples, tracing faint and dotted examples, manual guidance as the strokes were being made, large arm movements, writing in the air, following sandpaper letters and grooves made in wood, and tracing on his forehead—had not produced any significant differences other than an increase in frustration.

Mark also had physical problems with his shoulder and arm movement and with fine motor control tasks. These problems showed up in his writing; strokes were rarely smooth or fluently executed. Tension was quite obvious in his posture (not only during writing tasks) and could be seen in the slash of his pencil. He did not keep a consistently even alignment across a page with ruled lines. The conventional proportion between upper- and lower-case letters was not maintained, with different types of letters (upper- and lower-case, printing and cursive) being intermingled. Spacing between words was often no wider than spacing between letters. More importantly, the sequence in which he formed the strokes of each individual letter made transfer to cursive writing difficult because the general progression from left to right was continually interrupted—even within an individual letter—and each letter did not flow towards the next.

Harold (fourteen years) was able to print his first name slowly but could not reliably spell his five-letter surname. He was an extremely hesitant reader and writer. His writing was all done in manuscript printing. He had decided against learning a cursive style under classroom conditions and had made no attempt to modify his own style in that direction. He claimed it was too complicated. Again, he was by now resistant to teacher-initiated change and as he did not seem to need the speed that might be achieved with a cursive style, perhaps his choice was satisfactory for his own school use. The formation of his letters was tentative and he depended on teacher confirmation and help with some let-

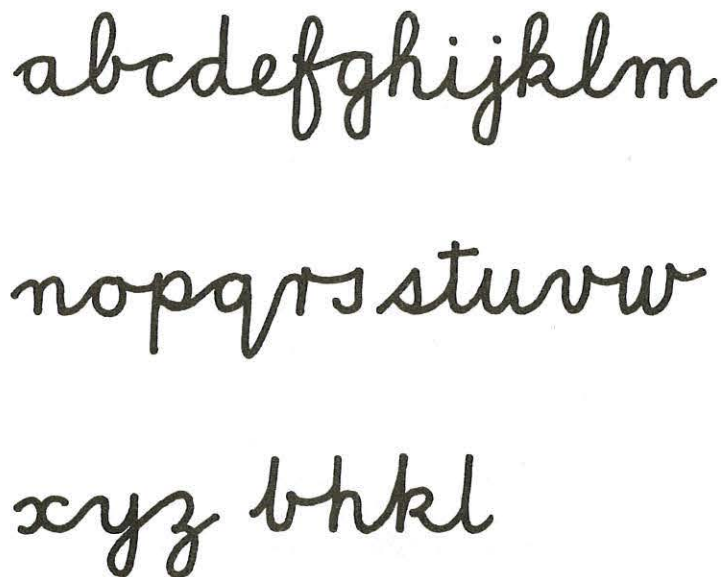
ters. His writing was usually faint, with poor alignment across the page and small letters. On the other hand, his printing style was regular in stroke sequence for the known letters except that closures in the *a-o-d* group of letters were not completed.

Clarence (thirteen years) was a reluctant reader and had a poor record of school attendance. His usual handwriting style was printing but if pressed he could copy a limited quantity of cursive script. He could write his first name in cursive but not his surname, which had a double *r* in it. While he could manage a single *r*, he

Figure 1. Mark's initial signature (copied from records).

A handwritten signature in cursive script that reads "MARK Tow...". The letters are somewhat slanted and connected, with a loop at the end of the word "Tow".

Figure 2. The model alphabet selected for use in the study—a variation of commercial cursive.

A model alphabet in cursive script, showing lowercase letters a through z. The letters are arranged in three rows: "abcdefghijklm", "nopqrstuvw", and "xyz bhkl". The letters are slanted and connected, with a loop at the end of the word "Tow" in the signature above.

confused the two different styles of the letter that he had learned—one from school and one from his mother. This presented a problem of relearning or extinguishing what is acknowledged to be a difficult letter. His handwriting suffered from untidiness, erasures, and over-written letters, but his style showed physical competence at the task of producing letterforms.

The writing instruction in the present study differed little in aim from the normal school program. Pen on paper signatures were collected from the three subjects before they began to use the computer and all other teaching of cursive handwriting was discontinued for the duration of the experiment. Mark's initial signature is depicted in Figure 1. Further examples were taken at intervals during the program.

The subjects were not learning a completely new skill as all could hold a pencil and print at least. What was being attempted was the relearning and remediation of a known skill together with the introduction of an unfamiliar style in cursive handwriting. The style chosen was similar to that developed by Spalding and Spalding (1957) (Figure 2). Allowance for some individual differences was made with optional choice of a loop for letters such as *k* and *l*. The usual slant of cursive was omitted as a compromise with printing. Further individualization of handwriting style could be made subsequent to the program if thought desirable.

Equipment Details

The DIGIVUE display screen and associated pen are shown in Figure 3. The display is 21.7 cm square and consists of a 512 by 512 line matrix of small (pinhead sized) neon-orange light points. Each point can be lit or extinguished individually. The "quantized" representation of graphic detail by small light points is quite satisfactory except for fine detail. This precludes writing with letters less than a few millimeters in height, but has not proved to be a significant limitation. In practice, using large letters (a few centimeters high) on the display screen for tracking exercises seems to have advantages in reducing problems of fine motor control and aiding perception of stroke orientation, curvature, and connectivity. Students tend to reduce the size of their signature automatically when transferring to paper.

The pen used with the display is the size and shape of a thick pencil. The computer calculates the pen position using the lengths

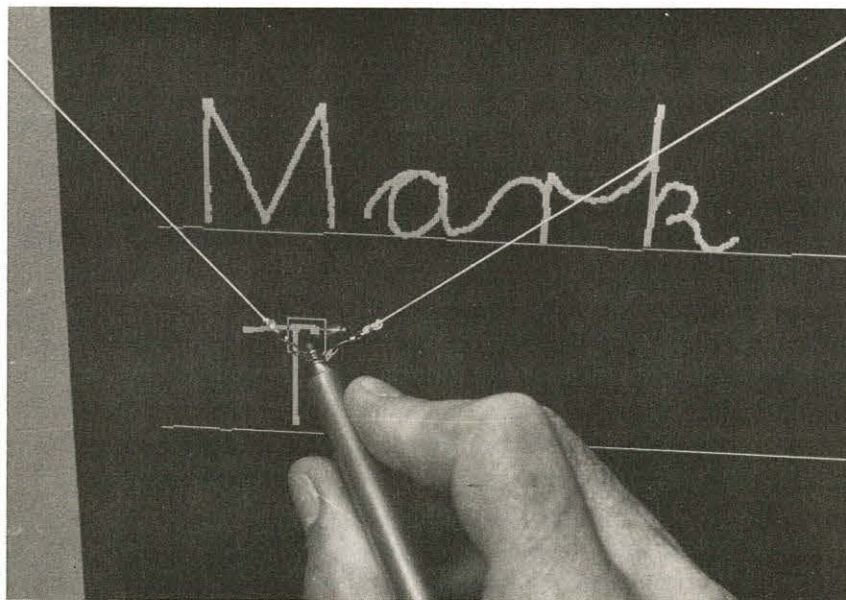


Figure 3. A student using the display screen and pen.

of two fine strings attached to the pen just above the tip. The strings are lightly tensioned and pass through eyelets at the left and right above the display. The nylon tip of the pen is spring loaded and operates a switch inside the pen body which indicates whether or not the pen is pressing down on the surface. Only a light pressure is required to operate the switch, and the nylon tip lets the pen slide easily over the surface. It is thus possible to give the impression of writing by getting the computer to leave a lighted track under the tip of the pen as it is pressed down and moved around the display screen. This impression is aided by the DIGI-VUE's steady flicker-free display and high contrast.

The face of the screen is angled at 20° from the vertical, providing subjects with a presentation which is readily observable. Being near to vertical also helps with letter strokes being "up" or "down" on the writing surface. The slight upward force on the pen resulting from the tension in the strings does not interfere with gripping the pen or with writing.

Parallax errors arise because the actual display is about 7 mm behind the front surface and because the pen position is measured at a point slightly above the tip. The effect of these errors is circumvented by arranging for a small square box or cursor to appear on the display centered on the calculated pen position. To ensure that the cursor box is always visible, each point around its perimeter is made the complement of the background detail (i.e., dark goes to light and vice-versa). Rather than watching the pen tip, subjects watch the cursor (which also defines the active area under the tip during tracking exercises). Because all three subjects were right-handed, the cursor was deliberately offset several millimeters to the left of the pen tip as an aid to visibility.

Around the edge of the display screen are "function boxes," as can be seen in Figure 3. When the pen is pressed down momen-

Figure 4. The DIGI-VUE display seen by the student.

tarily inside one of these boxes, the computer program carries out the requested function (e.g., starts a new tracking exercise or changes the value of a parameter such as the thickness of track left by the pen during free drawing, or the size of the cursor box). Some boxes were marked with colored dots as an aid to the subjects, who controlled the equipment themselves as far as practicable. Other boxes were used by teachers when creating exercise files (i.e., "pages" of writing tasks) and had no effect during exercise sessions.

Instructional Strategy

At the beginning of the study subjects were given a period of free drawing to familiarize themselves with the display, pen and cursor box. By pressing the pen inside the various function boxes they could draw, erase parts of drawings or clear the screen completely, change the width of track left by the pen (in the range 1 through 30 points), or store drawings for later recall.

As an introduction to tracking exercises, some horizontal wavy lines stored as a computer file were recalled as thin (1 point wide) guidelines which the subject attempted to track, aided by a small blinking spot (5 points square) which indicated where the pen should be. The thin guideline changed into a thicker track (3 points wide) as the subject moved along it, tracking successfully. If he started at the wrong end, moved in the wrong direction, moved off the guideline, or lifted the pen, track filling stopped and the blinking spot called his attention back to the point where the pen should have been. Successful tracking required the blinking spot to be inside the cursor box with the pen pressed down and moving in the correct direction. The difficulty of the task was adjusted by varying the cursor box size in the range of 10 through 30 points square.

The subject then moved on to begin tracking lines with sudden direction changes and other basic elements of both printing and cursive writing. Each exercise consisted of a series of strokes, each of which had to be successfully tracked before the next was presented. The teacher defined these strokes when creating the exercise file simply by lifting the pen momentarily at the end of each stroke. Introductory exercises occupied no more than the first fifteen-minute session.

A signature file was constructed for each subject and used as

follows. The subject's name was analyzed for its stroke sequence in the style selected and then entered by the teacher (via the DIGI-VUE screen and pen) together with a reinforcing message including similar letter sequences, and stored as a file on the computer's disk. On playback each stroke appeared as a thin guideline with the signal spot blinking to indicate the beginning of the stroke. Each point on the guideline was made the complement of the background detail so that the guideline was visible even where it lay along a previous stroke (e.g., the upstroke in the letter *r*). The subject tracked along the stroke keeping the cursor box around the blinking spot and leaving a thicker line behind. As tracking of each stroke was successfully completed, the next guideline appeared without delay like a pathway unfolding or moving along. Thus each stroke indicated its own dynamic pattern as it was about to be drawn by the subject. An example of the display seen by the subjects is shown in Figure 4. The signal spot can be seen inside the cursor box leading the filled-in track along the guideline. At the end of each "page" (i.e., display screen full) a smiling face pattern appeared, to indicate the end of that task. An important point was that subjects were informed of any errors quickly yet gently because track filling proceeded only when they were tracking correctly.

Two files were created for each signature. One involved tracking as described above, while in the other an example which did not have to be tracked was presented at the top of the screen, and the subject had to track "secret" strokes beneath the example which were presented without any guidelines. The blinking spot and track filling operated as before so that the task appeared to the subject as a copying exercise. Each session included the signature file, but as only one of the tasks involved. Reward files included tracking pictures of cars and cartoon characters (see Figure 5) and a file for free drawing recall. A special file was created to practice the letter *r*.

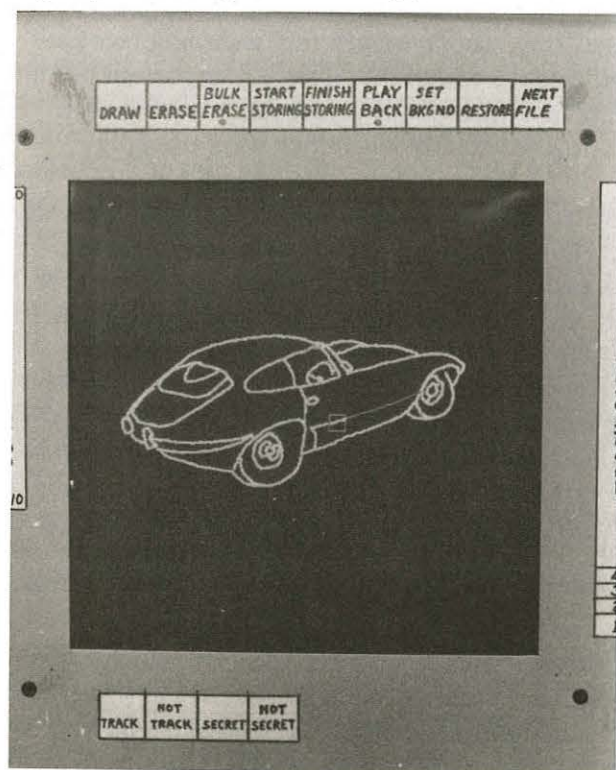
Features of the Program

There are several features of this style of presentation which are not available with ordinary handwriting instruction. The visual feedback is tightly controlled in relation to both stroke sequence and direction and letter shape. The student does not see his own poor initial attempts at approximating the model—he sees only

the model itself. This is because the size of the cursor box allows for lack of manual precision while the predefined track continues to be illuminated by the student. Success in tracking can be arranged for the most shaky hand and the correct visual information always results no matter what actual path the student follows. This is a greater degree of control than that placed on a student either by tracing a letter or using a chemically treated pen to reveal an invisible pattern, because neither of these methods enforces the stroke sequence or direction, and tracing does not control the resultant visual pattern. The actual pen movements used by the student are recorded by the computer and can be reproduced at the end of each exercise if desired.

A second feature is that the program always positively reinforces correct responses and ignores incorrect responses. It is able to

Figure 5. An example of a tracking picture.



shape the student's response with increasing accuracy by reduction of the cursor box size. It reduces the alternatives available to the student (Moxley, 1975) to easily manageable proportions, since in ordinary handwriting instruction the path the pen must follow is open to a great variety of direction over which the learner has little control. Choice is not eliminated though, and the extent of choice faced by the student can be varied to suit his abilities.

The main advantage of the program is that it reveals handwriting skills to the student as a dynamic process. Even the acknowledged major study in visually guided motion (handwriting) by Birch and Lefford (1967) looks at handwriting or pattern making more as a product than as a process. While the skill is being learned, handwriting is a process where the emphasis must be on motion. The product of marks on the page with their conventional meaning follows from this learning process. The program described comes closer to recognizing the dynamics of handwriting skills than any other system available.

Results

All subjects learned their new signatures and were able to write them with a pen on paper in increasing conformity with the computer presentation. Attributes used in judging progress towards criterion were: letter shapes; smoothness of strokes; and inter-letter proportions, alignment, spacing, and connections. The first feature to appear on paper was the stroke sequence of the model, followed by increasing smoothness of line, better letter proportions, and then a reduction in size of the letters by making them smaller than they appeared on the display. Mark took twenty-six attempts (i.e., fifteen-minute sessions) at doing his signature with the computer, Harold sixteen attempts, and Clarence eight attempts to reach criterion. At this stage, both names in their signatures had the appropriate capitals, letterforms, and joins. Mark's signature included ten letters and six joins. His progress during instruction is shown in Figure 6. Towards the end of instruction emphasis was placed on overall fluency—Mark's final signature is shown in Figure 7. An encouraging aspect of the subjects' reaction to the program was the close attention they paid to the task and the patient presentation possible through computer mediation.

The skills acquired with the computer pen and display transferred fairly readily to pen and paper, apart from the initial ten-

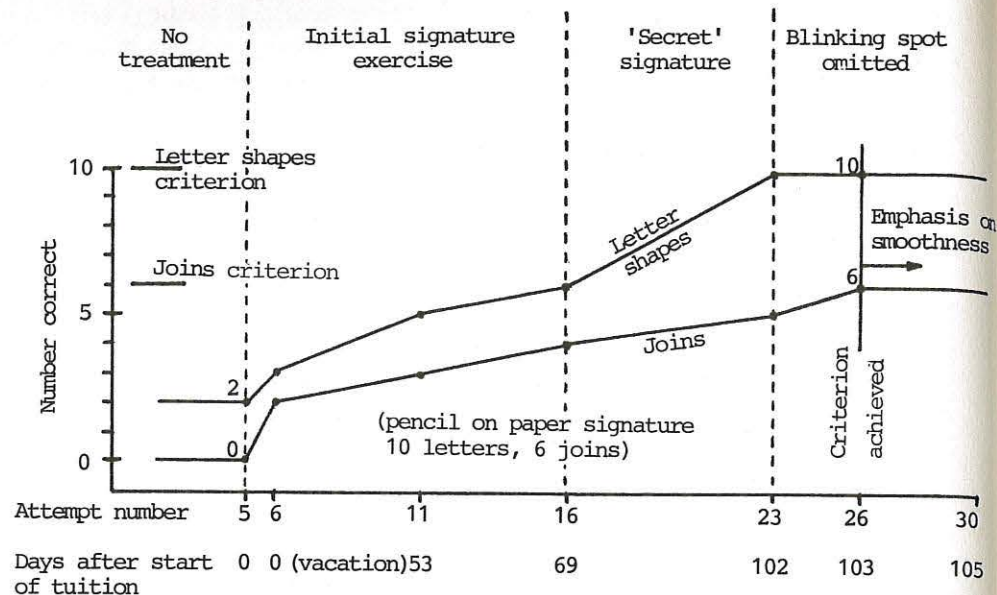


Figure 6. Mark's progress towards criterion.

dency to use large letters. Transfer to the area of handwriting in general was not assessed because of the limited aim of the program, namely, to teach fluent signatures. Harold and Clarence left The Woden School shortly after completion of instruction and no evaluation of long-term retention of the skills they acquired has been made. Six months after the end of instruction, Mark could still execute his signature with reasonable fluency and accuracy, but he had reverted to the original form of *r* in his Christian name (see Figure 1). Long-term retention would clearly be improved by tapering off instruction over a period of several months rather than terminating suddenly.

Discussion

For students who have not progressed satisfactorily despite extensive tuition with a range of methods, and who have become conditioned to failure in the handwriting area, the radical difference of the computer presentation (together with the natural fascination of computer devices) allows a fresh start to be made. The program

Mark Tow...

Figure 7. Mark's final signature (copied from records).

structure makes success likely no matter how uncertain the student's efforts, by breaking a complex operation into a series of simple steps. Students can therefore move quickly onto writing which is meaningful to them (e.g., their signatures) rather than having to spend a lot of time on preliminary exercises.

The degree of assistance to the subjects was progressively reduced so that the task they were performing approximated normal writing more closely. First the cursor box size was reduced. Next the blinking spot was disabled so that subjects had to remember (or find out by trial and error) which direction each stroke had to be drawn in. The degree of segmentation was then reduced so that guidelines for whole letters or sequences of letters instead of individual strokes were presented as units, thus reducing assistance with the order of stroke completion. Finally, an example of the required signature was presented at the top of the screen and the subject had to track a "secret" signature on the lower part of the screen which was presented with the blinking spot but without guidelines. The subject had to track an invisible path, remembering stroke sequences and anticipating changes of direction. The good results obtained were partly attributable to the ease with which exercises could be tailored to fit individual student needs.

To develop further fluency and exercise handwriting dynamics, an alternative presentation is possible. In this case the exercise material is segmented only at points where the pen would normally be lifted (such as in crossing a *t*). The computer presents the guideline for each segment and waits for the student to press the pen down on the blinking spot. The spot then moves along the guideline at a speed which varies dynamically in the same fashion as that used by the teacher in creating the exercise, leaving a thicker track behind. The student tries to track the moving spot (which does not wait for him except at the beginning of each segment) and an audible tone sounds when he is tracking successfully. On com-

pletion of each exercise, a bar graph at the right of the display indicates average tracking accuracy. The speed of movement can be adjusted so that it is slower or even faster than that used by the teacher when creating the exercise.

The system described is clearly applicable to teaching of handwriting skills in general as well as to teaching signatures. In this regard, tasks have been devised which exercise perception of stroke orientation and curvature. It has been suggested that the techniques developed could also be very useful in the rehabilitation of patients who have suffered brain and/or limb damage and who have to relearn perceptual and fine motor skills. The use of an impersonal machine to teach such skills could save mature and intelligent people some of the embarrassment they feel with a human teacher when they are unable to perform apparently simple tasks.

The costs of handwriting tuition using computer techniques are somewhat greater than with conventional media. A display and pen similar to that used currently costs several thousand dollars, and could easily be interfaced to an existing minicomputer. They could also be connected to a remote computer via telephone lines, but an inexpensive microcomputer would be required locally to look after the details of cursor generation, track filling, etc. The costs of computing devices continue to decrease while their capabilities and reliability increase, but at present the most obvious application of a computer-based approach is in cases where conventional techniques are not proving satisfactory.

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Considerations for the Design of a New Pen Range

Chris Rhodes

Abstract

Basic questions that confront a pen designer begin with the style of the nib. Apart from specialists' pens used for commercial marking or technical graphics, the designer is restricted to the fountain pen, the ballpoint, the fibre-tip, the plastic-tip, and the roller-tip. Unique, specialized inks and reservoir systems serve each of these kinds of pens. Each pen's usability is directly affected by its barrel design, which can vary in size for children and adults.

The most important single component of the pen is the nib—the business end. Despite an apparent revolution in the technology of nib design, the actual range of available nib configurations is relatively limited. If one excludes felt-tips (restricted now to marking and colouring) and the new capillary tube pens (found almost exclusively in technical and graphic studios), we are left with only these alternatives: the fountain pen nib, the ballpoint, the fibre-tip, and most recently the plastic-tip and the roller-tip. Of these the fountain pen nib, the plastic- and fibre-tips all employ the principle of capillary action but rely predominantly on another principle: the mutual affinity of ink and metal or plastic.

Ballpoint Pens

The first commercially successful fountain pen was marketed by E. L. Waterman in the 1880's. That same decade also saw the first ballpoint patent. In technological terms, however, they were generations apart, and it took some fifty years before the potential of the ballpoint could be realised. The first truly viable ballpoint was patented in 1938. In this and all subsequent designs a viscous ink is drawn from the reservoir by its affinity for the revolving ball. The ball itself, in modern versions, is made of tungsten carbide or stainless steel. It is fitted into a finely engineered housing, the bottom section of which contains a series of feed channels (Figure 1). As the ball rotates it draws ink through these feed channels and carries it round onto the writing surface where it transfers cleanly

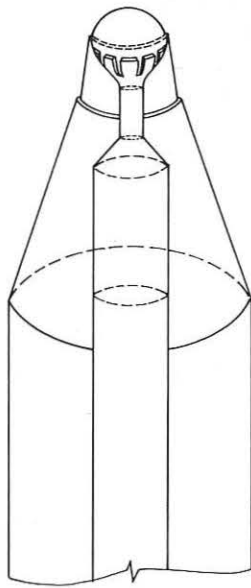


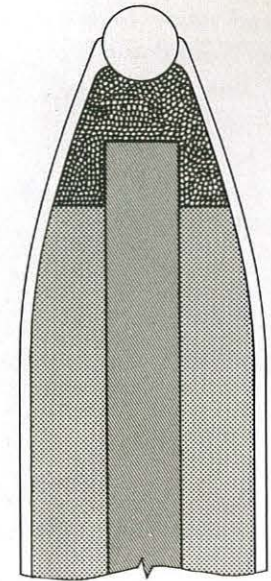
Figure 1. The housing of a ballpoint pen.

from ball to paper. This motion, acting as a rotary pump, draws more ink down from the reservoir onto the ball to give a continuous flow.

The inks consist of pigments dispersed (or dissolved) in solvent, with resins and wetting agents added to adjust viscosity and flow characteristics. The balance between these various components is delicate. The ink must be compatible with metal ball, yet its attraction for the metal must be less than for the writing surface. If it is not, instead of transferring cleanly to a sheet of paper, the ink will carry on round and build up on the ball-housing which eventually would produce unsightly blobs. Of even more importance is the drying feature of present-day inks. The solvent in the ink at the surface of the minute spaces between the ball and its housing evaporates to form a thin crust-like membrane. This crust both reduces further evaporation of solvent and assists in restraining ink against leakage or regression.

In addition, of course, the ink has all the usual requirements to fulfill: a smooth, regular, water-resistant line; consistent colour; no objectionable permeation of the paper or bleeding. The ink should also dry quickly—in five seconds or less without leaving

Figure 2. The point of a roller pen showing the lattice of fine capillaries between the ink reservoir and the ball.

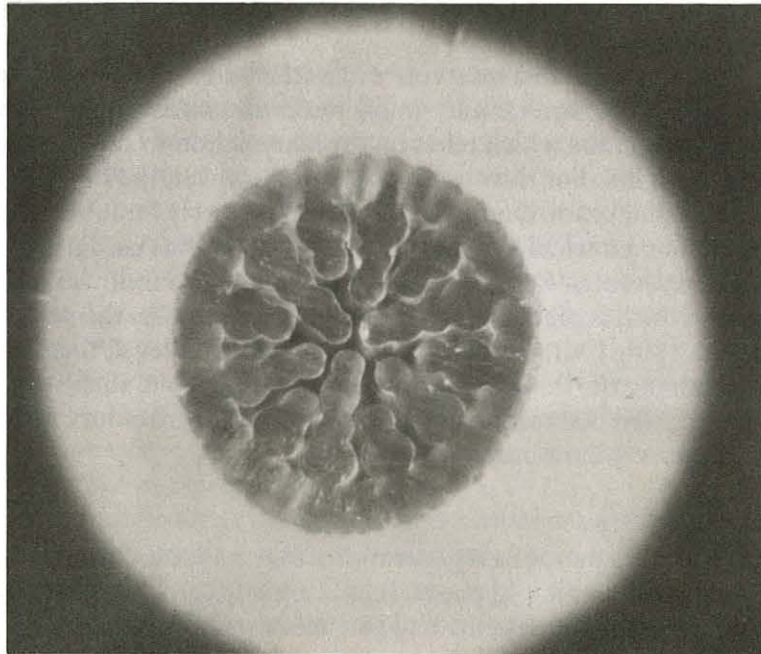
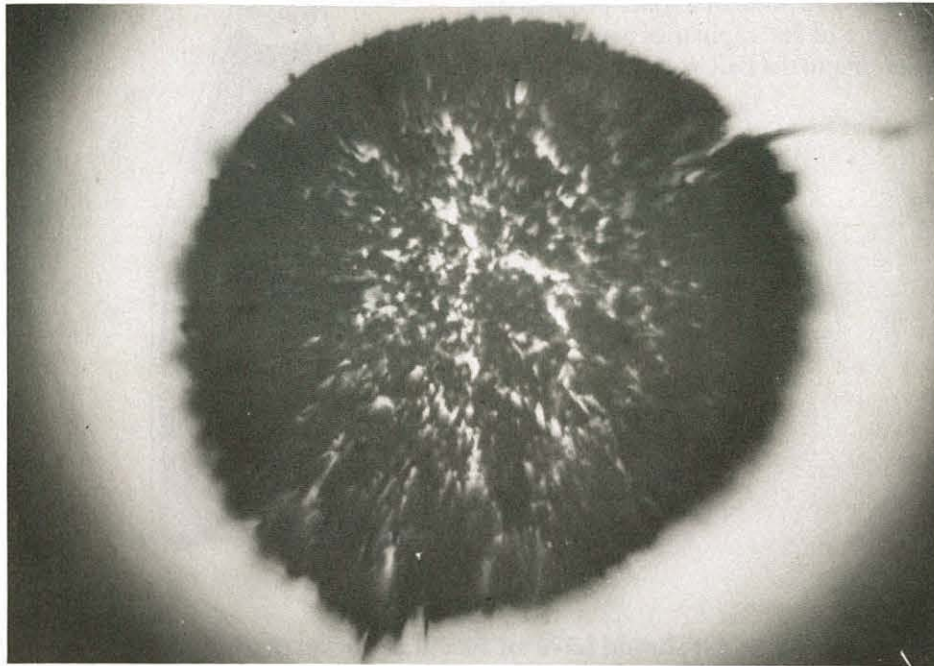


any stickiness, and it should have an acceptable level of fade resistance. To satisfy these criteria chemists have had to devise a necessarily oily ink which is most unpleasant if it accidentally escapes from the pen.

The ink is held in a reservoir within the barrel of the ballpoint pen. The most familiar and simple reservoir consists of a plastic, open-ended tube which relies on capillary action to support the column of ink. For this system to work, however, the tubes have to have a small inside diameter and thereby severely limit the volume of ink that a normal pen can carry. Newer systems use larger sealed reservoirs. One popular version employs a follower of grease which is placed in the end of the reservoir. As the pen is used the plug is drawn down with the falling ink level, thereby maintaining the same pressure within the reservoir. Such systems have enabled pen technologists to increase the write-out of ball pens by several thousand metres.

The Roller Tip

The roller-tip pen, a new generation of the ballpoint, also employs a ball to transfer ink to paper. It appears outwardly the same as its forebears, but whereas the ball pen uses a metal housing and gluti-



nous ink, roller pens combine a plastic tip with a fluid, water-based ink which gives a lighter touch, a freer flow, and is much more pleasant to handle during and after manufacture. Water-based inks can be used because the roller pen contains a lattice of fine capillaries between reservoir and ball which controls the rate of ink flow (Figure 2).

Fibre and Plastic Tips

Whilst the freer flowing quality of a roller pen is liked by some, others insist there should be more friction between nib and paper. The slight drag slows the pen movement, thereby encouraging a more careful and precise letter formation. This quality is a great asset of fibre and plastic tips; in addition, the tip material can be moulded or ground to many different configurations, allowing wide flexibility in nib design. Figure 3 shows a cross section of a conventional fibre nib. Three types of fibre can be matched to the specific requirements of the user: acrylic for very hard, tough points; polyester for soft, smooth nibs; nylon for a firm, flexible tip.

Plastic tips consist of extruded acetal. These are also made up of a multitude of fine capillary tubes, but are part of the original extrusion (Figure 4). Acetal is a very hard plastic and can be engineered to extremely close tolerances.

With the introduction of these new nib configurations has come a different family of reservoirs. These are generally made from polyester or acetate, although earlier models were made from wool and closely resemble the filters for cigarettes. They are made of intertwined strands within which are numerous tiny passages acting as capillaries for the ink. Into the reservoir is pumped a fluid ink (water or spirit based). This is drawn through the capillaries towards the nib and thence onto the paper. Providing the nib and

Figure 3. A cross section of a conventional fibre nib.

Figure 4. An enlargement of a plastic tip showing ink channels between the plastic fibres.

reservoir are matched properly, the downward flow is just strong enough to have the ink drawn from the nib, but not so great as to drain the reservoir quickly and cause flooding. To ensure an even and regular flow a vent-hole has to be precisely positioned near the nib which prevents a vacuum from forming or internal pressure blowing out the ink.

The Barrel

The second most important factor—after the nib—affecting usability of a pen is barrel size. To establish which size is best liked for comfort and control, an industrial designer was asked to present a selection of prototype models to a group of adults. They tried pens of different body widths and lengths, in both brief and protracted writing tasks. There emerged a preference, albeit with a great degree of tolerance, for a pen length somewhat shorter than a standard pencil: a total length (including end plug and nib adaptor) of about 130 mm. As for width, adults found an increase in diameter of about 15% over a previous norm of about 9.5 mm (at the grip) improved control and comfort.

Tests were also organized with children with the help of four primary school classes (120 pupils). From earlier work with pencils educationists have been convinced that when learning to write, children benefit from a broader-bodied instrument. They believe it allows for a more relaxed movement, reduces fatigue, and encourages a flowing letter formation. Our pen survey reaffirmed this. However, whereas the use of wider-bodied instruments has usually been confined to beginners, our tests suggest it also assists older children, in particular the child who is neither an exceptionally able writer nor an especially poor one. As with the adults, a pen of around 11 mm proved most popular with the pupils—and most acceptable to their teachers. The larger diameter also gave the advantage of a long write-out. A smaller diameter would have necessitated an inordinately long barrel.

I would just add that we have subsequently been working with Nicolette Gray and many schools in this country (England) with a view to developing the ideas touched upon in this article. Certainly there is still much research to be done and it is to be hoped that this will be fostered by both academics and industrialists alike.

Wanted: Handwriting That Fits Modern Pens

Gunnlaugur S. E. Briem

Abstract

The limited range of the pointed pen restricted the range of movements that make up the copperplate hand. The ball-point and the fibre-tip can write in any direction and do not fit the motion pattern that modern handwriting inherited from the copperplate. Analysis of the late roman cursive, a monoline documentary hand, might yield some alternative solutions in the rethinking of handwriting models for children.

Before typewriters many people wrote an excellent copperplate model (Figure 1). It was an elegant and legible hand for such things as record keeping and correspondence. For their own personal use people would write in a less demanding manner; in its own way their handwriting was just as bad as ours is today. Let's not be misled by the beautiful work of clerks and professional scribes. People have scrawled horribly for centuries. Queen Elizabeth I wrote a graceful italic in her youth. Her writing later in life is less publicized and is a sad example of how illegible handwriting can get. Montaigne often complained that he couldn't read his own



Figure 1. A copperplate-based business hand in common use at the turn of the century. From B. T. B. Hollings, *Pitman's How to Write a Good Hand*, Sir Isaac Pitman & Sons, London, 1915, p. 42.

writing. And the handwriting of St. Thomas Aquinas was so bad that paleographers have a special term for it: *lettera inintelligibilis*.

We inherited a great deal of our contemporary trouble with handwriting from the copperplate model and the pen it was written with. The copperplate pen is flexible and pointed and has a long ink slit. It is limited to a very narrow range of movements and needs careful handling. If you put pressure on the upstroke of a copperplate pen, it snags in the paper and sputters ink all over your sheet. The copperplate hand developed around what the pen could and couldn't do. The thicks and thins were made by pressure on the nib. The possibilities and limitations of the pointed pen determined the movement pattern of the writing.

The copperplate hand isn't very easy to write. It has been simplified and watered down and evolved over time into various business hands. They didn't look much like copperplate anymore but they shared most of the movement pattern. They are the foundation of the most common styles of modern handwriting. The thicks and thins are gone; the swashes have been trimmed off. But the restricted movement pattern of a pointed pen is still there.

The ballpoint is a good pen, but it isn't suited to the ideal movements of the copperplate pen. One of the things that our handwriting needs is a motion pattern that fits modern pens. The ballpoint pen has marvelous possibilities. It can write in any direction, on any surface, and underwater if you like (Figures 2, 3). It also has its limitations. It has a monoline stroke, and it doesn't give your hand the kind of rhythm that some other pens do.

In her contribution to *Dossier A-Z*¹ in 1973 Nicolette Gray suggested a study of the late roman cursive as being useful in the development of handwriting that suits modern instruments (such as ballpoints and fibre-tips). Under her guidance I did research and analysis on the late roman cursive along the lines she proposed. My work was in connection with the Inner London Education Authority Art Inspectorate research programme that is working toward a new model alphabet for school children.

The established process for teaching children to write is to let them copy a sans-serif alphabet (Figure 4). Some of them never

Figure 4. A modern model alphabet for children: isolated characters tending toward geometry. From John W. Cataldo, *Lettering*, Davis Publications Inc., Worcester, Mass., 1958, p. 57.

Figure 2. With a ballpoint pen a letter can be written upwards just as easily as downwards.

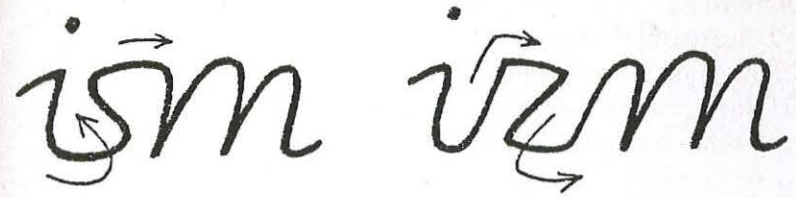
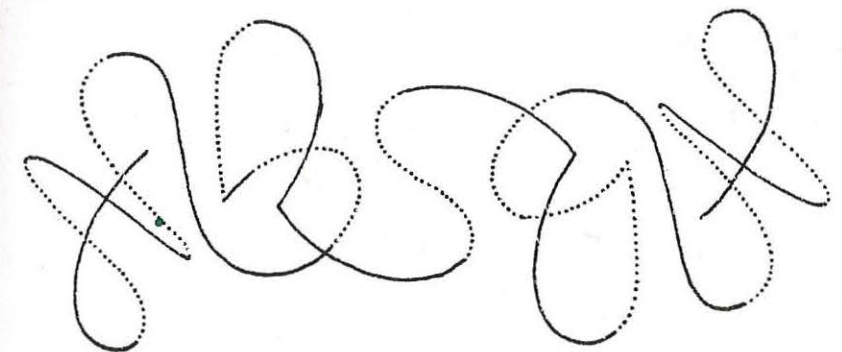


Figure 3. A ballpoint pen with free stroke direction makes this motion pattern easily. The dotted lines show the directions that a pointed pen is not suited to.



master cursive writing. We are, in other words, returning to isolated characters tending toward geometry. They have no movement pattern within a character nor in linking one to another. Did we really learn anything at all from the centuries of evolution that our handwriting went through?

The latin alphabet was in its early form made up of isolated characters that tended toward geometry. The strokes neither had an easy track within the character nor connected letter to letter (Figure 5). Early cursives were basically attempts to write the roman capitals with a minimum of inconvenience. A good running hand didn't appear until the characters had taken on a new, streamlined form. They had to change a great deal; many came to look very different from their inscriptional cousins.

Figure 5. Early Roman inscription made up of isolated capital letters that tend toward geometry. The strokes neither had an easy track within the characters nor connected letter to letter. Fifth to second century BC. London, British Museum.

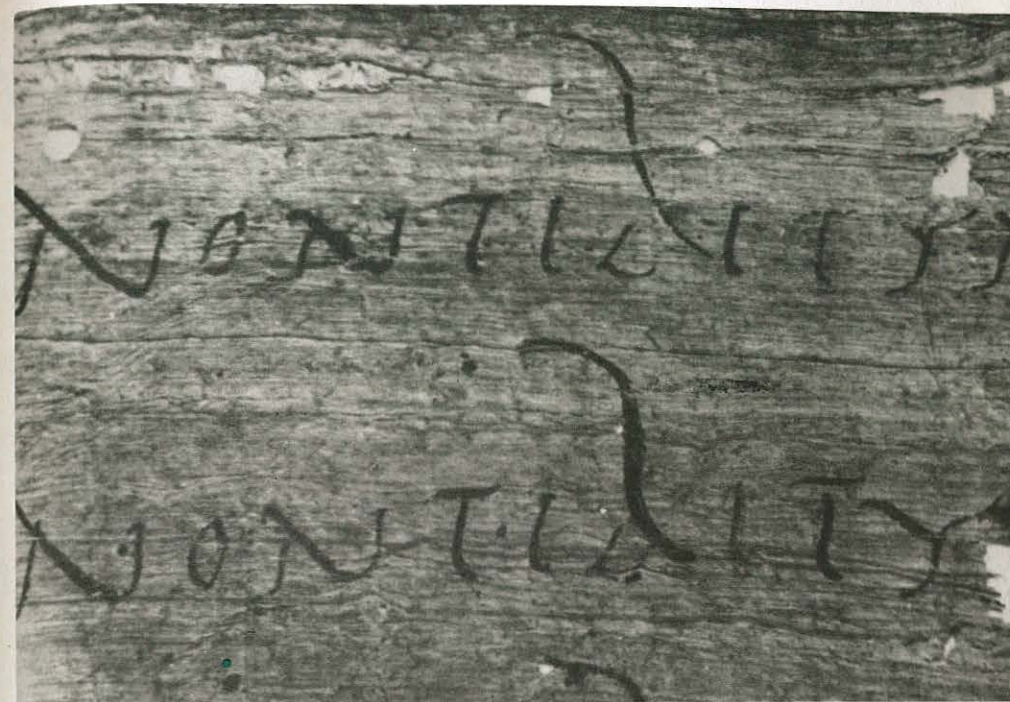
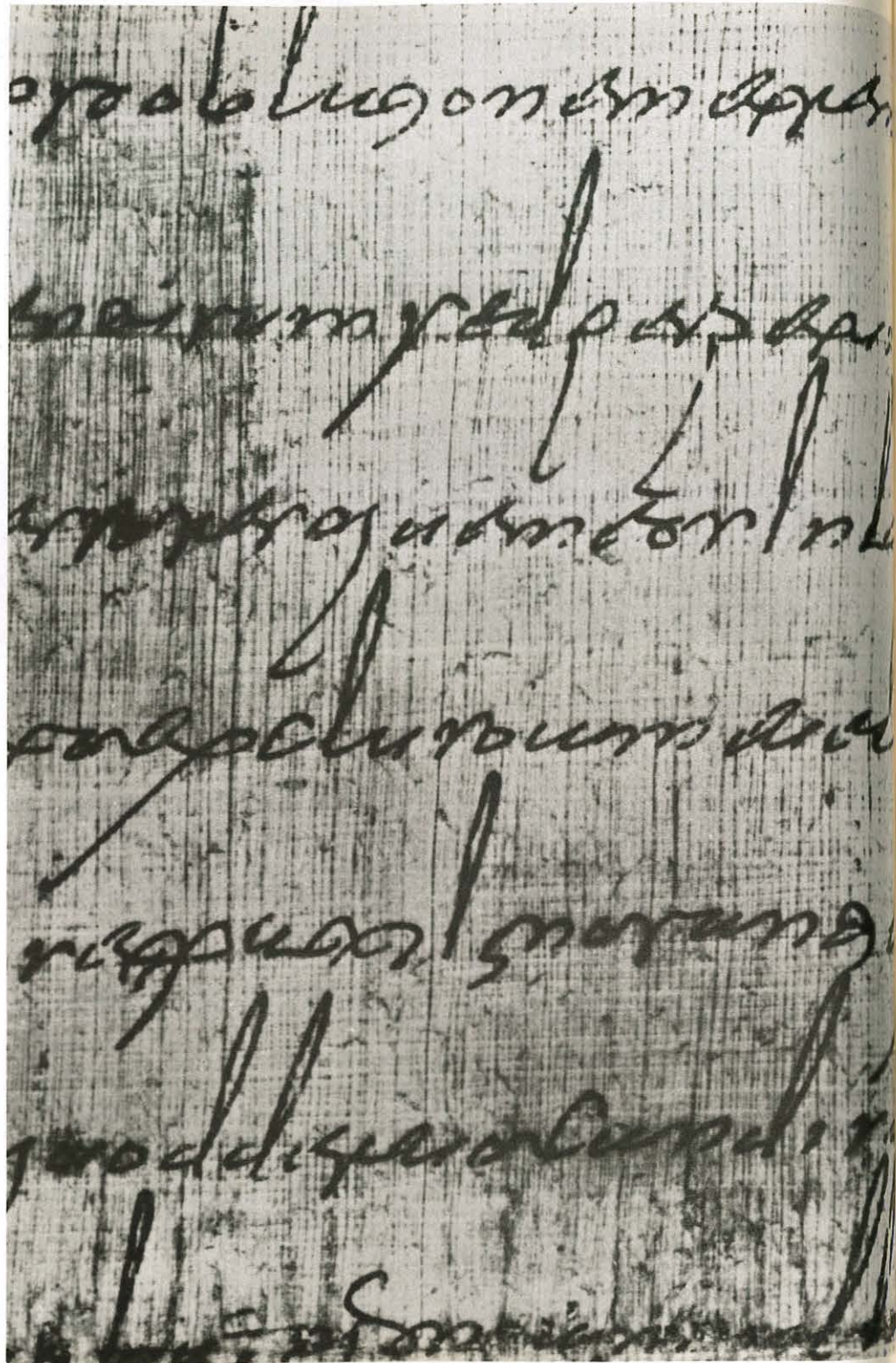


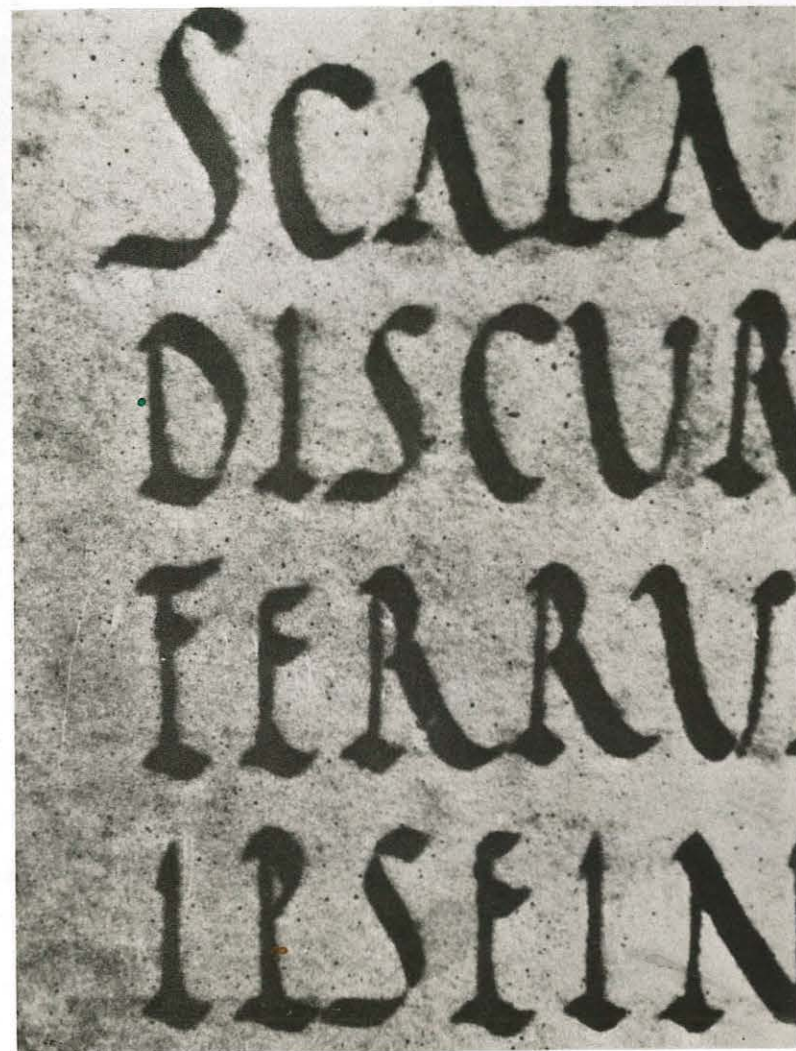
Figure 6.a. Early roman cursive was written with fluid strokes but letters were not joined up. London, University College, Institute of Papyrology.

It took the Romans at least five centuries to develop a functional cursive writing, called late roman cursive to distinguish it from the early roman cursive which was a rather unsuccessful attempt (Figure 6). Late roman cursive was the documentary hand of the Roman Empire (a Greek version developed alongside). It went through changes in book hands and provided practically all the interesting solutions in the movement pattern of the quarter-uncial (Figures 7, 8, 9, 10). Most subsequent cursive styles are in debt to the late roman cursive. The Gothic documentary hands of the Middle Ages, with their evolved and fascinating movement pattern, borrowed heavily from it. And some of the best recognizable characters of modern handwriting (say, *b*, *d*, *h*, and *l*) are still written the way Roman scribes changed them for their convenience.



b. Late roman cursive was a true running hand. The letters were joined. They were easily written and had changed much from their earlier geometric forms. Some of the differences brought about by the Roman documentary scribes have lasted until this day. Manchester, John Rylands Library, Ms. Lat. 1.

Figure 7. Rustic book hand, third to fourth century AD. Rome, Vatican Library, Palat. Lat. 1631.



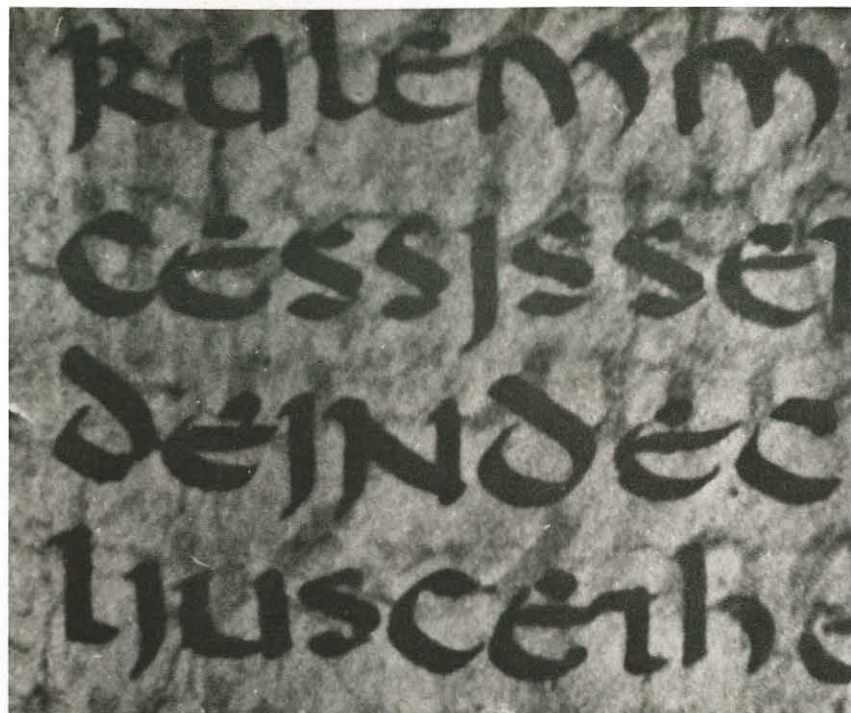


Figure 8. Uncial book hand, sixth century. Paris, Bibliothèque Nationale, Lat. 5730.

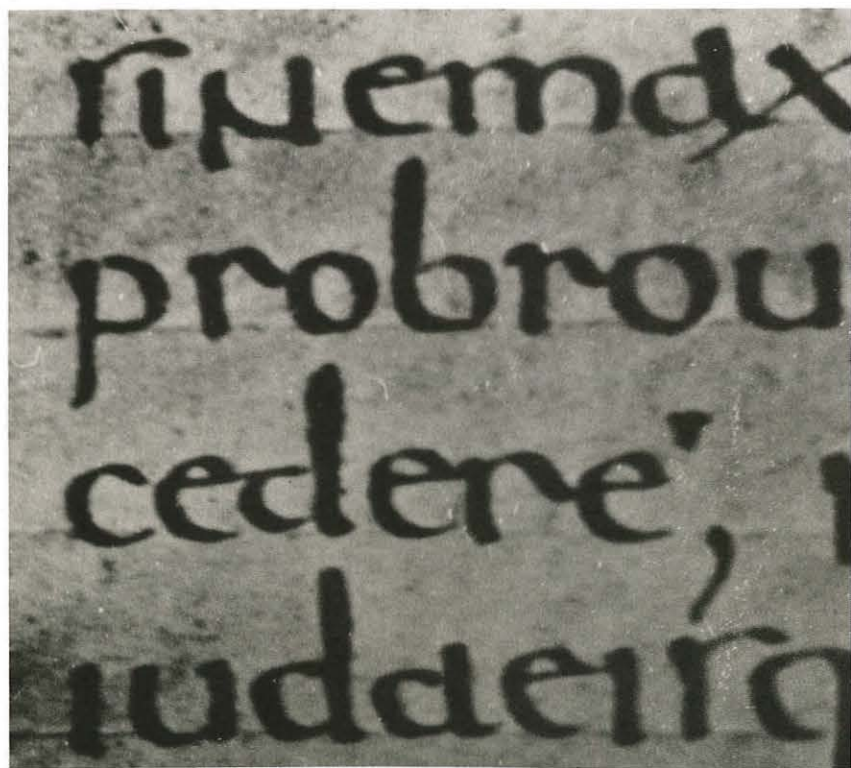


Figure 9. Half-uncial book hand, sixth-seventh century. Milan, Bibliotheca Ambrosiana, c 105 Inf.

Figure 10. Quarter-uncial documentary hand borrowed heavily from the late roman cursive, both in letterforms and movement patterns. Fifth century. Naples, Bibliotheca Nazionale, Lat. 2.

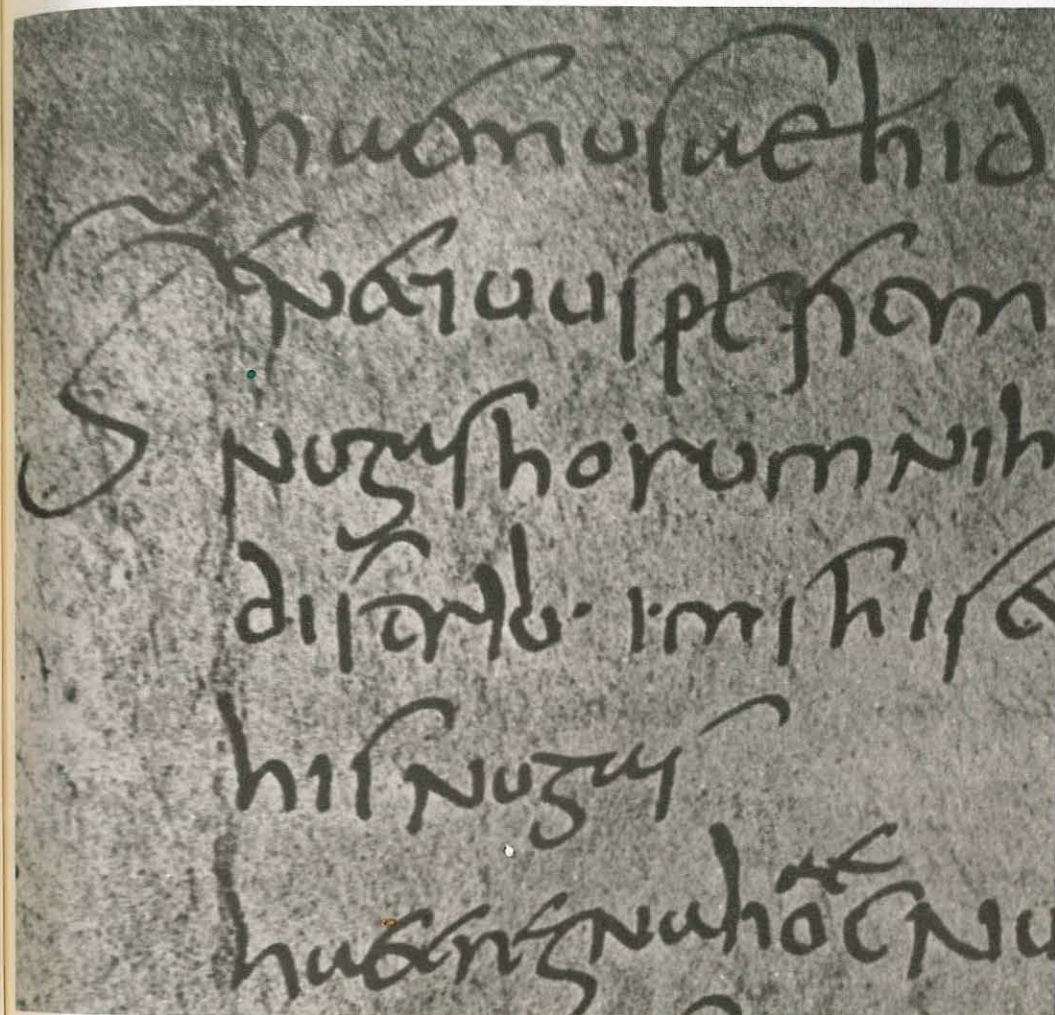




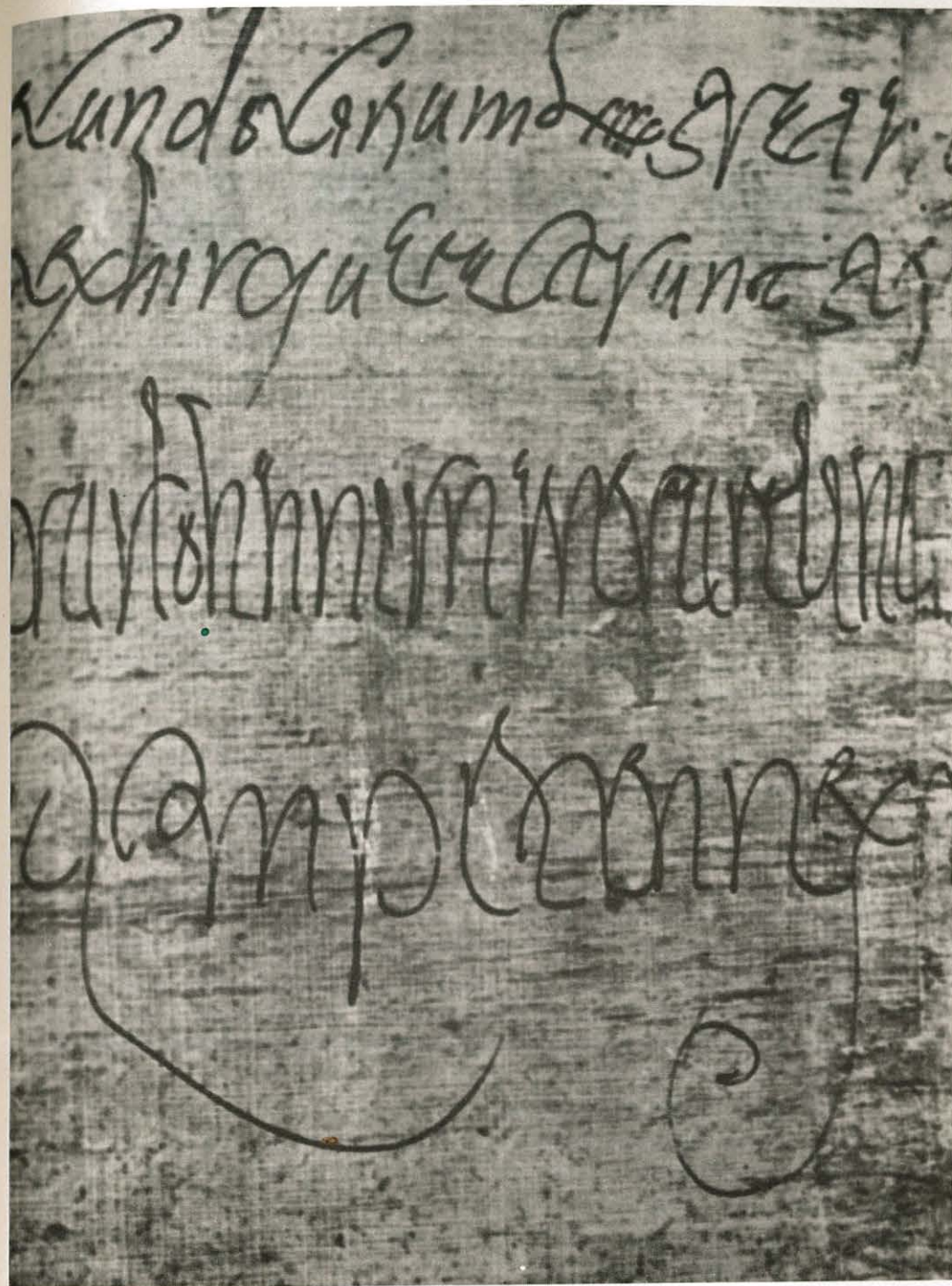
Figure 11. Three joined late roman cursive letters (*g-e-s*). The ligatures were stronger than individual characters, and pen lifts occur in the middle of letters rather than between them. Paris, Bibliothèque Nationale, Lat. 8842.

Monoline swashes and twirls

At first the general appearance of the late roman cursive may appear a bit zany; line upon line of unbroken monoline text. It has no paragraphs, no punctuation, not even wordspaces. Some of the letterforms look perfectly outlandish until you get to know them (Figure 11). They turn out to be rational and obviously connected to the stroke sequences in other versions of the alphabet of Imperial Rome.

Characters used for the main text also serve as display lines and subheadings (Figure 12). When they are written boldly, ascenders and descenders run in the unlikeliest directions. Swashes and twirls seem mandatory. Separate ascenders were sometimes added to a half-finished letter just as you would cross a *t*. The tail of an infrequent letter like *y* might be tied into a knot. Proportions and

Figure 12. With differing proportions the late roman cursive was used for main text (two top lines), a compressed subheading (third line from top), and for a display text (bottom line). Paris, Bibliothèque Nationale, Lat. 8842.



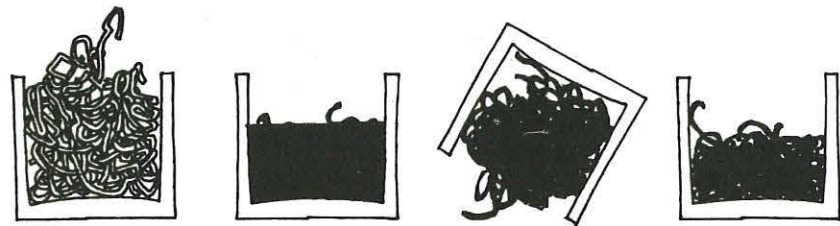


Figure 13. A piece of string in the inkwell makes the ink feed evenly. Fibrous material (or a small sponge) is put into the inkwell; it is filled with ink; excess ink is drained; the wet string feeds the pen evenly.

x-height seem to have been a matter of personal whim. The writing rhythm is dotted with frequent pen dips between short, lively strokes. The ink feed is very even, and I think the scribe must have had something like a tangle of string in his inkwell, a practice still common today in the Middle East (Figure 13).

Many letters of late roman cursive join up as a matter of course and some combinations are always bound in ligatures. Others, say *m* and *n*, never join the following letter. The only difference between *a* and *u* (*v*) is that *a* is always joined and *u* never is. The shape of some characters depends on whether they stand alone or are in an initial, medial, or final combination, much like Arabic (Figure 14). Late roman cursive is crawling with ligatures. And when two letters share a stroke between them, the bonding is stronger than either component part. The letters tear apart rather than break the connecting line.

Late roman cursive was written with a reed sharpened to a blunt tip that resulted in monoline writing. My experiments often suggest that the ink slit was very short, although they are long on surviving pens. I was disappointed to discover that the curls and loops in ascender upstrokes were a necessity rather than the sheer exuberance I took them for at first. After the Muslim conquest of Egypt in 640 the papyrus sold to the West was of poor quality. The surface was often rough and had plant fibres running across the recto face. Sideways movements in long upstrokes (like the tacking of a boat in a headwind) made it possible to move the pen over the barriers without a lift.

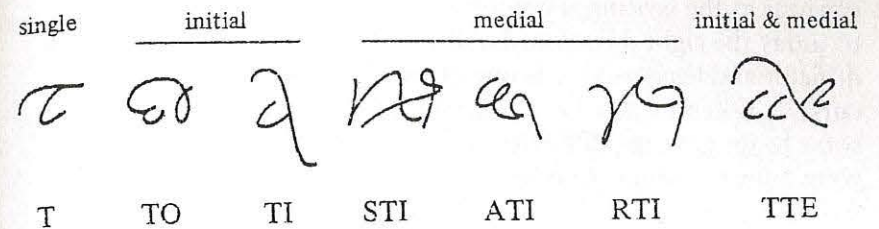
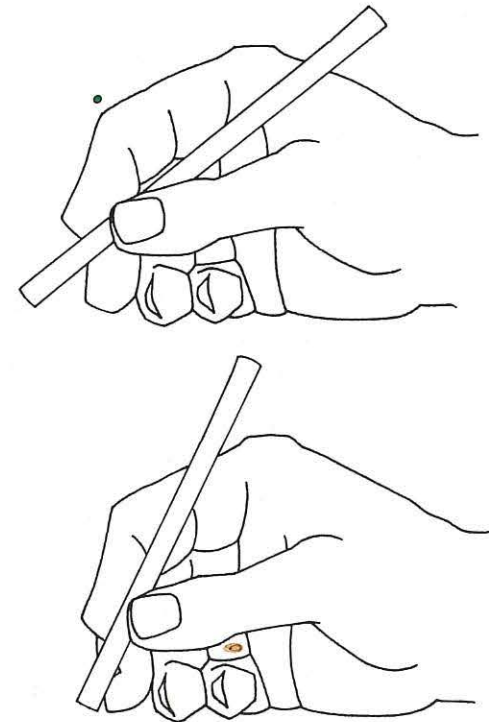


Figure 14. Variations on a late roman cursive *t* in one manuscript. London, British Museum, BM 5412.

Figure 15. Conventional penhold (top) and transverse penhold (bottom) as used for writing late roman cursive.



Transverse penhold

The penhold of late roman cursive differs from most other cursives. The scribe held the pen transversely; the pen cant is not very obvious as the writing is monoline. With the penhold we are used to today the right downward oblique movement is one of the most difficult and least used. It is one of the mainstays of late roman cursive. When I started copying late roman cursive manuscripts, some loops gave me difficulty. The downward oblique strokes were not easy either. And written at speed everything came out wrong. I expected the letters to lose their shape, but they came apart the wrong way. As soon as I tried the transverse penhold, the whole muddle cleared (Figure 15). The curves became smooth and the strokes fluid enough to lead out of one character into the next. It was surprising how high the writing speed could go. Only the ink-dips seemed to hold it back. I wonder what those chaps could have done with a fibre-tip.

Where had we better go from here?

My research into late roman cursive yielded a sizeable collection of letterforms, ligatures, and interesting strokes. Most of it was quite useless, as you would expect. Some bits were used in an experimental model alphabet from many sources that will soon be test-run in selected London schools. I wasn't much help in designing the model. My training as a calligrapher turned out to be a drawback. I had no idea which strokes would be too difficult for children. The programme of the Inner London Education Authority Art Inspectorate goes on in the capable hands of Nicolete Gray and Prue Wallis Myers. I hope the new model will have a wider movement pattern than the copperplate-descendant we use today. We might hope for beauty in the path of a monoline pen as it is in the late roman cursive rather than thicks and thins from pen angle or pressure.

1. Baudin, F., and Dreyfus, J. (eds). *Dossier A-Z '73*. Association Typographique Internationale, Andenne, Belgium, 1973, pp. 106-7.

Towards a New Handwriting Adapted to the Ballpoint Pen

Nicolete Gray

Abstract

Modern ballpoint and fibre pens are radically different in design and construction, and they can move with equal ease in all directions. The capacity for all-direction line movement fosters development of more convenient and efficient letter designs and combinations. After rejecting the typographic models and debased cursive designs used for formal writing in the past, the natural scribble of children is taken as a beginning point for all-direction cursive writing. By integrating such handwriting with the teaching of reading and other language arts, the habit of legible handwriting can easily flow into an adult hand characterized as fast, pleasurable, and flexible enough for individual expression. Certain historic hands, late roman cursive, gothic, and secretary, offer examples of contradictory rhythms that support the goal of all-direction writing movement. Specific new models are presented for modern writing but only as provisional designs. Experimental interpretations are encouraged; standard techniques for penhold are questioned in favor of new possibilities that reflect the all-direction approach to writing.

For the past few years I have been working on the idea of a new way of writing. I have called it a "way" because my starting point has been the way of putting pen to paper, of forming letters and words. Out of this a new style may develop, but at this time the creation of a new style is not a useful aim.

The need for a new way of writing follows from the fact that we are writing with new instruments. Ballpoint and fibre- or nylon-tipped pens are radically different from the pens of the past—from quills, steel nibs, and fountain pens of similar nib construction. These pens had their own advantages and limitations, and the classic handwriting styles of the past—secretary, italic, copperplate—reflect these qualities. In particular these scripts all depend for their perfection very largely on the movement of line from thick to thin, whether created by pressure on a flexible nib or by the broad-edged, stiff nib moving at a fixed angle to the paper. The way in which these nibs move also affects

letter construction; movements which are difficult to make, such as up strokes, are avoided, those which are easy are emphasized in the writing rhythm.

The new pens—most easily described as “all-direction” pens—do not have these characteristics. The line which they make is undifferentiated; with some a certain difference of thick and thin can be obtained, but not much. On the other hand, they can move with equal ease in all directions. The limitations imposed by other types of nib no longer exist, so letters can, if more convenient, be constructed differently and more easily.

Undoubtedly some people, by taking trouble, can write good italic and copperplate hands with all-direction pens. But with most people good hands formed in these styles tend to deteriorate and grow slipshod and formless. For the average child of today in England—and I believe also in North America—no proper style of handwriting has been developed. In the formative stage they are probably taught printscript (or manuscript); that is, they are taught to copy letterforms which have been developed as detached typographic forms, with all cursive characteristics eliminated. This inculcates a way of thinking about letters which dies hard: the idea that the letter has one basic form, which is typographic, and that it is the shape only, not the way in which it is made, which matters. Thereafter, children may learn some form (probably a debased traditional form) of cursive writing; many just “join up” their printscript model. Over a number of years I have been collecting and analysing the handwriting of students at various levels of schooling. One sees the persistent influence of typographic forms, particularly in insufficient spacing and diminishing ascenders and descenders, making for illegibility and dreariness.

So on two quite separate counts we urgently need a new method and a new model in the teaching of handwriting. We can start from the ballpoint pen. We need to start in the reception classes at school. Are there any other starting considerations? We need surely to consider what we are aiming for. Copperplate, and to a lesser degree italic, were evolved as formal hands. People needed to write a “fair hand”—for commercial and legal records, for all scripts for the printer—in order to get any literate job. Today this is unnecessary, all that class of work is done on the type-

writer. We need to write for informal purposes only. Speed has become, with legibility, a primary consideration. To these I would add enjoyability: if we are going to learn to write, why not make it a pleasure?

We learn to write as small children, and teachers are naturally pre-occupied with the first stages. *We use* handwriting as adults. The learning and the practice should be a coherent development, but so often those interested in handwriting are concerned with only one of the two ends. I am interested in and have some experience with children, but I am not a teacher; my contribution is really at the adult end. Prue Wallis Myers, until recently one of H.M. Inspectors of Schools in Manchester, has long experience of school work and the teaching of small children. So together we compass both ends. We have just finished a draft *Teachers' Manual*, which is to be tried out by some co-operating schools; we hope that it will be published in a completed form by the beginning of the next school year.

Basically what we are producing is a model and a method, and these are founded on four principles. Firstly, on using the quality of the new pens. Secondly, on the idea of taking the natural scribbles of the young child as a starting point and developing these in stages—but without a break—into cursive handwriting. Thirdly, on integrating the teaching of handwriting with the teaching of reading, language, and spelling. Fourthly, on working towards the creation of an adult hand which shall be legible, fast, pleasurable, and sufficiently flexible in formation to allow for individual expression.

The new pens move in all directions; consequently one can include new movements, in particular upward, backward, and horizontal movements which were difficult to make with the old pens. It is to new movements that we must look to find interest and beauty to compensate for the loss of beauty and variety provided formerly by contrast between thick and thin in line width. These must not be meaningless flourishes but movements which contribute also to legibility by emphasizing the differentiating characteristics of each letter. To find such movements we have looked at earlier styles of handwriting because it is unnecessary, wanton indeed, to try to invent anything in the way of new letterforms. We have only to turn to the organic history of each letter

to find the movements we need, so we looked first at the earliest form of cursive, the late roman cursive when a pen not unlike the modern pens was used (but, of course, a dip-pen). Important collaborating research in this field was done by Gunnlaugur S. E. Briem. This proved fruitful, suggesting a possible new penhold and new ways of forming and joining some letters.

We have also looked at gothic and secretary hands which provide interesting uses of contradictory rhythms. Why should all ascenders be parallel? Diagonal movements of *d* and *v* (Figure 1) provide a lively contrast, the backward curve of the descenders of *g* and *y* (Figure 2) can do the same. A horizontal bar to *e* (Figure 3) is an aid to legibility, crossbars of *f* and *t* (Figure 4) are useful ligatures. Alternative forms to letters can add interest and suit different letter-juxtapositions and can be suggested to older children and adults. These are the sort of ideas we have been looking for.

The old pens took one, sometimes two, strokes for each letter. The new pens write whole words in an unbroken line. We need to take this into account from the beginning. It is not just a question of forming single letters well, but of drawing groups of letters as one satisfactory symbol. And here the link with reading and spelling provides itself. An analysis of good ballpoint hands coincides with teaching experience in positing an optimum of two or three letters in a single movement. Obviously these should in the first instance be the letters which frequently occur together in any particular language. In English there are many digraphs, letters which together signify sounds which are different from those signified by single letters, combinations such as *ou*, *ai*, *sh*, *th*, etc. There are also grammatical suffixes such as *ed*, *ing* (Figure 5). Children are often taught to read words rather than separate letters; why not also write words from the beginning? These are the sort of units which we think should be used in the teaching of handwriting, so that ligatured letters should be well-formed and beautiful.

In all this we are really thinking about line-movement, and this is basic to our method and model. We think it essential that children should be taught not just the shape of the letter, but how it is made, where it begins, ends, joins on. In this, continuity should be established with children's natural scribble patterns, which

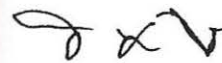


Figure 1.

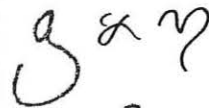


Figure 2.

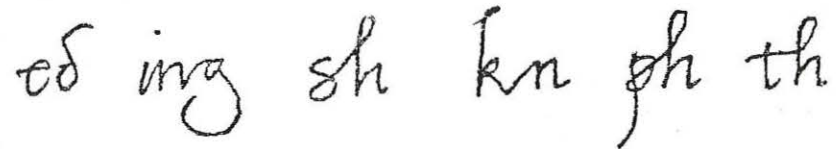


Figure 3.



Figure 4.

Figure 5.



can easily be directed to grow into letterforms, so a natural flow need never be lost as it is when children are made to draw disconnected typographic letters. This is also an anchor for legibility. If we always make a letter with the same movement, it remains recognizable even when the movement is simplified for the sake of speed.

This stress on units and movement is also a stress on rhythm. But the rhythm of different people's writing, even when making the same movement, may be different. Some people may enjoy curving movements (such as *g* in Figure 6) fading into a flick; others may like strong verticals, and end their *t* or *d* (Figure 7) or *f* with a firm down stroke. This leaves room for personal expression.

The crux of the matter is, of course, the actual pen movements and letterforms which we advocate. Here I would like to stress that our model is experimental. A new style is not made by two people—we just hope to get it started. Some things we feel very strongly: for instance, loops. The simplest way to get from the



Figure 6.



Figure 7.



Figure 8.



Figure 9.



Figure 10.




Figure 11.



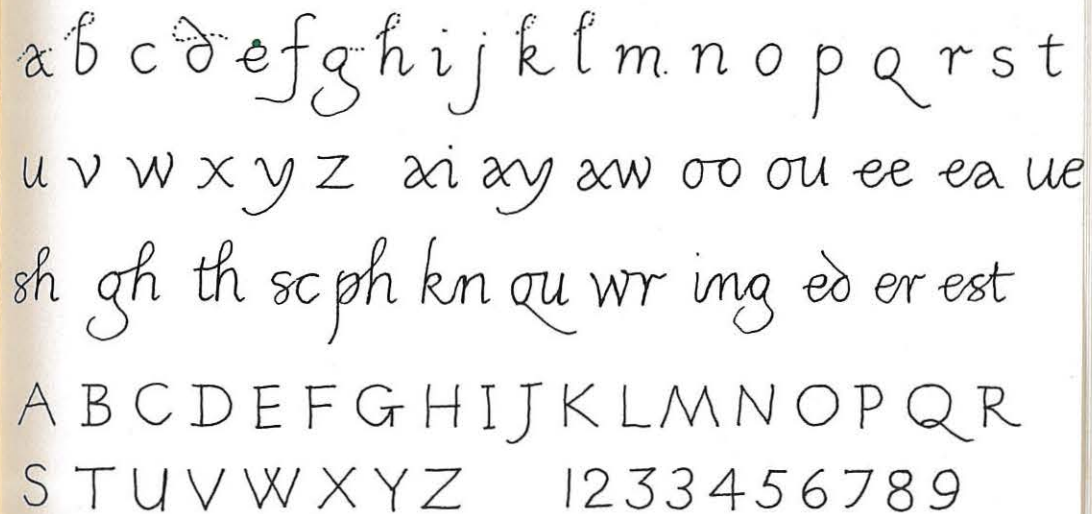
Figure 12.

previous letter to an ascender is with a loop; this can also be a pleasing decorative element. An *r* (Figure 8) must begin with a curve round and up into its stem, in contradistinction to the truncated form which is becoming common. Double *f* should be a distinctive sign (Figure 9), not two identical *f*'s, etc. On the other hand, we have experimental ideas which we should like to try out. For instance, it has been noted by teachers that children often like to start their letters from the bottom upwards. With the new pens this is quite possible; why not, for instance, start *sh* (Figure 10) at the bottom? Again *qu* (Figure 11) always comes together; why not make *ou* in one stroke (Figure 12) and give the *q* its tail as you would dot your *i* or cross your *t*?

So many writing books state that the pen must be held correctly in such and such a way. With the new pens is there any correct penhold? They will write when held in all sorts of different ways. Here again we want to try out all possibilities, and get rid of fixed ideas.

One must always bear in mind that writing is communication. We have always to find the mean between new ideas and the preservation of continuity. We can, I think, revive old forms and formations of letters, forms which are part of the organic life of the letter throughout history. There is no need to think of creating new forms. We do, indeed, plan to produce a second publication, designed for a stage when children are old enough—say, ten or eleven—to be interested in forming their own handwriting, and which will chronicle something of the history of this organic life of each of our letters (Figure 13).

Figure 13.



a b c d e f g h i j k l m n o p q r s t
u v w x y z ai ay ax oo ou ee ea ue
sh gh th sc ph kn qu wr ing ed er est
A B C D E F G H I J K L M N O P Q R
S T U V W X Y Z 1 2 3 3 4 5 6 7 8 9

Abstract

Due to the greatly increased demand for clear, rapid handwriting by secretaries in the service of government, church, and commerce, Renaissance writing masters found themselves playing an important role as instructors. In producing their manuals for students, the writing masters utilized the recent technical developments in printing and based their teaching on the newly developed script of scholars and diplomats and churchmen, the *cancellaresca corsiva*. The teaching of seven Renaissance writing masters is assembled to examine separately what the masters had to say about basic elements of writing—slope, pen angle, letter proportion, length of ascenders, spacing, and joining. Having thus identified the fundamental canons that regulated the classic chancery hand of the Renaissance, the author applies them to modern systems of italic handwriting and concludes that the models of Alfred Fairbank as seen in his *Handwriting Manual* and the Beacon Writing Series come closest to the spirit and teaching of the early writing masters. He supports the use of the edged pen as a teaching aid for young children.

A more accurate title would be “Some Canons of Some Renaissance Handwriting.” To treat the subject in its entirety would require several articles. This article therefore concentrates on a few fundamental aspects which are well documented and also relevant to handwriting today. That handwriting remains an essential ingredient of modern education is taken as a proposition which it would be otiose to debate.

The medieval writing master worked in a limited sphere. The great mass of the population was illiterate and expected to be so. Handwriting and calligraphy (the terms were hardly distinguishable at that time) flourished especially in the monasteries. It was also taught in the grammar schools. Perhaps it is not surprising that no actual models, and only scattered texts, survive. The latter are generally crude bits of Latin verse, often of a mnemonic character. The most substantial text of this kind, the *Forma Scribendi* by Hugo Spechtshart, consists of less than two hundred lines of

Latin verse and would only be useful if one had a teacher. No doubt certain basic rules were handed down traditionally, but the whole business was un-coordinated and unsystematic. The scene was transformed in the fifteenth and sixteenth centuries, particularly by the increase in demand for handwriting, the invention of printing, and a new script.

Increased demand. The Renaissance was the time in which the European community of the Middle Ages yielded to the forces of nationalism: the apparatus of the modern state began to take shape. The authority of the Church came into question, while geographical exploration widened the horizons of commerce and pushed forward the frontiers of knowledge. An explosion of activity—political, ecclesiastical, commercial, and diplomatic—took place. Machinery had to be created to meet the new demands. Historians concur that it was during the sixteenth century that bureaucracy really started to flourish. New offices were created and had to be manned.

Consequently a need arose for secretaries who could handle voluminous correspondence, who could write quickly and clearly from dictation, and who could draft documents at short notice. Pedro Madariaga in his *Libro Subtilissimo* of 1565 developed at length the thesis that handwriting was vital to Spanish society and was an appropriate, even essential, accomplishment for the hidalgo, who at that time—like many since—regarded it with contempt or indifference. All these secretaries had to be trained. The man who would play a leading role in this was the writing master. His instruction would have to be practical, concentrating on those scripts which were most required, and composed with full explanations to enable those who so wished to teach themselves.

Invention of printing. This speaks for itself. With the aid of printing the writing master could now reach the wider public which was clamoring for his guidance. It was now worth his while to produce organized material and to publish rules that had hitherto been regarded as secrets of the art. There was, however, a stumbling-block (if “block” be the right word). It was not until about 1520 that engravers mastered the technique of engraving cursive letters on wooden blocks; until this difficulty was overcome, the writing master could not reproduce his models by printing.

Although printing facilitated the teaching and diffusion of good handwriting, the traffic was two-way. The printed book adopted

conventions based on the written manuscript, and in 1500 Aldus Manutius commissioned for his Aldine classics a new typeface modeled on the handwriting of contemporary scholars.

Another consequence of the invention of printing was that, for the first time, one master could study another man's methods at leisure. For some reason those who fancy themselves as having a special insight into handwriting—from that time until today—usually develop, as by divine afflatus, rigid, idiosyncratic viewpoints. There is no lack of controversy and abusive language in sixteenth-century writing books.

A new script. At the end of the fourteenth century and the beginning of the fifteenth, scholars such as Petrarch, Coluccio Salutati, Niccolò Niccoli, and Poggio Bracciolini were collecting and transcribing newly-discovered texts of the classics. They were attracted by the clear, upright Carolingian script which they found in the manuscripts of the eleventh and twelfth centuries, and some—especially Poggio and Niccoli—employed it as a pattern for copying their texts. Making separate, upright roman letters involves frequent pen-lifts. It is not the most rapid way of writing. Under pressure of speed, copyists tended to join letters together when convenient, often by a diagonal join springing from the foot of the previous letter (though some horizontal joins at the tops of letters were also pressed into service), to write with a slight slope to the right, and to impart a distinctive oval shape to the circular parts of letters. The letter *o*, for example, now resembled an egg rather than an orange. The results was a brand-new cursive script, the *cancellaresca corsiva*, which became the typical hand of the scholar, the diplomat, the ecclesiastical dignitary, and their secretaries. It was above all used when the matter to be written was in Latin.¹ The new “chancery” script had the advantage of being compact, fast, and legible. The time had come to analyze and teach it.

By examining some of the canons which were evolved for writing the chancery script, we shall try to pull together systematically the teaching of seven writing masters—five Italians, one Netherlander, and one Spaniard. The authors and their books are:

Theorica et Practica (Venice, 1514) by Sigismondo Fanti (architect, astrologer, mathematician, and writing master). This was the first Italian printed writing book. It contains no models of script

because the author could not find an engraver capable of reproducing cursive script on wood blocks.

Lo presente libro (Venice, 1524, longer version) by Giovanni-antonio Tagliente, a public servant in the Venetian Republic (Figure 1).

La Operina (Rome, date uncertain) by Ludovico Vicentino degli Arrighi, Vatican scriptor and printer. This work was composed in 1522 but was probably not published until 1524 (Figure 2).²

Libro Nuovo d'imparare a scrivere (Rome, 1540) by Giovambattista Palatino, notary, poetaster, man of letters, and writing master (Figure 3).

Literarum Latinarum . . . scribendi ratio (Louvain, 1540) by Gerardus Mercator, engraver, scientific instrument and globe maker, cartographer (Mercator's projection), and calligrapher (Figure 4).

Recopilación Subtilissima . . . (Saragossa, 1548) by Juan de Yciar, calligrapher and writing master.

Opera . . . nella quale si insegna a scrivere (Venice, about 1565) by Don Augustino da Siena, priest and writing master (Figure 5).

We shall now examine what these authorities had to say about such basic elements as slope, pen angle, letter proportion, length of ascenders, spacing, etc. Although each topic is treated separately, they are all interrelated parts of a single system. If one is changed or neglected, the whole style of the script is affected.

Slope

Slope is essential to cursive handwriting. When we write rapidly, it tends to increase. Unless, however, it is curbed, the letters will sprawl and break down. Illegibility follows. If we have learned to write from a model that has only a slight, though distinct, slope, we stand a better chance of remaining legible when we write fast. This fundamental point was instinctively grasped by the early writing masters, though they had some difficulty in describing it precisely, possibly because the concept is best expressed in mathematical terms. Thus Fanti says: “You must see that the long downward lines and the bodies [of the letters] slope a little to the right” and Tagliente refers to “a little slope.” Vicentino is more roundabout: “See that the letters slope as follows. . . .” He then writes the tag *Virtus omnibus rebus anteit profecto* with an exaggerated

E gliè manifesto Egregio lettore, che le lettere Cancellareſche ſono de uarie ſorti, ſi come poi uederà nelle ſcritte tabelle, le quali to ſcritto con meſura & arte, Et per ſatisfactione de' cui apitiſe una ſorte, et cui maſtra, Io to ſcritto queſta'altra uariatione de lettere la qual uolendo imparare offerua la regola del ſottoſcritto Alphabeto :
 A a. b. c. d. e. e. ff. g. h. i. k. l. m. n. o. p. p.
 q. q. r. s. s. t. u. x. y. z. & .

Le lettere cancellareſche ſopranominate ſe fanno tonde longe large tratizzate & non tratizzate Et per che io to ſcritto queſta uariatione de lettera la qual imparerai ſecundo li noſtri precetti et opere

A a a b. c. d. e. e. f. g. h. i. k. l. m. n. o. p. q. r. s. t. u. x. y. z. & .

Figure 1. From Giovannantonio Tagliente. *Lo presente libro*, Venice, 1524.

Daccio che nel ſcriuer tuo Tu habbi piu facilità, farai che tutti li carac tteri, ouogli dire lettere, pendano inanzi, ad queſto modo,
Virtus omnibus rebus anteit profecto.

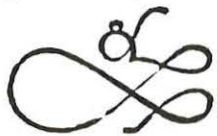
Non voglio pero che caſchimo tanto, Ma coſi feci l'eſempio per dimoſtrarti meglio la via doue diè te lettere hanno da ſtare pé denti

Figure 2. From Ludovico Vicentino degli Arrighi. *La Operina*, Rome, c. 1524.

Cancellaresca Formata.

Hor quali adunqz à tanti tui meriti
Potransi lode dar pari? Qual lauro
Ò mirto circondar à tuoi
Crini sacri di corona degna?

A b c a e f g b i k l m n o p q
r s t u x y z .



Palatinus Romæ Scribebat
Anno Domini .
M D XXXX

A uolere' imparare' regolarmente' questa
Eccellente' Virtù de lo Scriuere',
Qual si uoglia Sorte' di
Lettere, è' necessa
rio

primieramente' sapere' tenere' ben la penna
in mano,

Senza la quale' auuertenza, è' impossibi-
le' peruenire' alla uera perfettione' de lo
Scriuere'.

Et però auuertite che la penna si
deue' tenere' con le' due' prinne'
dita' appoggiandose' so-
pra' l' terzo

Per che' tenendola altrimenti, Il tratto no
uerria sicuro, ma'
tremolante'.

Figure 3. Classic chancery hand from Giovambattista Palatino. *Libro Nuovo d'imparare a scrivere*, Rome, 1540.

issima, sed quod omnium literarum
 huius protractionum tenuissimae proxima.
 Enimvero quae per c b angulos
 commeat proprium hoc sibi nomen habet ✓

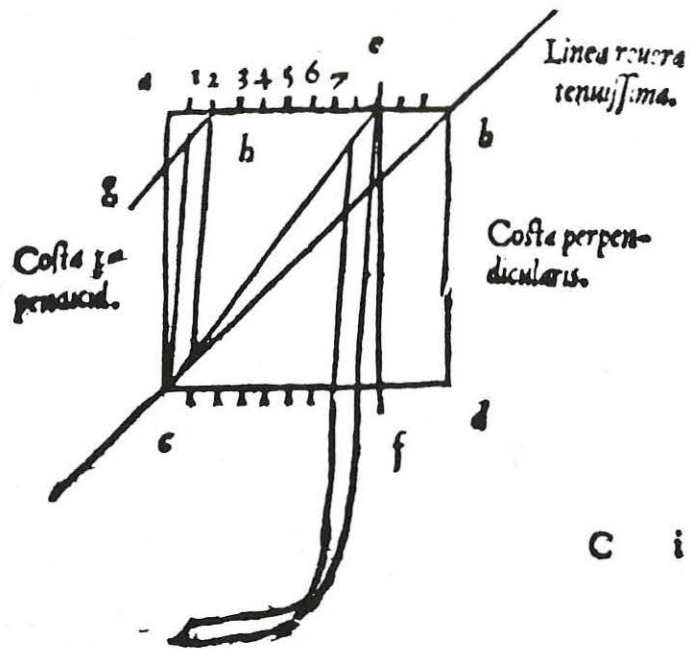


Figure 4. Page from Gerardus Mercator's *Literarum Latinarum*. Louvain, 1540.

Figure 5. Classic chancery cursive from Augustino da Siena. *Opera*, Venice, c. 1565.

& Dipoi hauerim memoria le sotto Scrite
 Regolette.
 Cioè sapere la distantia da uno verso à l'altro
 qual'è questa. dui byslonghi quadri, ò uero
 due grandezze della
 lettera a.

Per la uera chancellaresca misura del'aste
 Et gambe, la qual' usar si debbe' nel chancellarescho
 scriuere' com' e' uedi
 nel presente et
 annotato e sempro

slant (see Figure 2) and adds: "But I don't want you to tilt them quite so much as that." Palatino states: "Note that the chancery letter should lean a little forward, because in this way it can be written more quickly: moreover, if it slopes in the opposite direction, it is ugly and slow to write." Augustino and Yciar say much the same—Augustino: "Make sure that the letters slope towards the right, because you can write and form your letters more readily and more rapidly;" Yciar: "Note that the whole should lean forward a little: for in this way it looks more elegant and can be written more rapidly."

Mercator, as so often, hits the nail on the head. He provides his readers with a drawing of a letter *y* on a grid, from which it is possible to calculate a slope of 5° . Upright letters, such as those used in printscript, can confuse children who are learning to write. Uprightness is neutral, uncommitted; it will lead to either backward or forward slope as the lower or upper parts of letters are pulled forward under the gravitational force of increased speed. An alphabet with a slight slope removes ambiguity and leaves the letterforms sufficiently close to those of the printed word for those starting to read.

Pen angle

The tool for writing on which the writing masters concentrate is the quill, though Erasmus, and no doubt other scholars, often used a reed. Metal pens were also used. The quill is cut to a bevelled, chiselled edge which normally is at an angle of 90° to the vertical axis of the pen, though a slight angle was sometimes allowed. Here again many writing masters found some difficulty in defining the angle at which the pen should be held in relation to the line of the writing. Tagliente, for example, states: "My view is that you should not hold the pen by the edge of the nib, not with its full width, but obliquely, i.e., so that the full width of the pen always remains at an angle." Palatino's recommendation is that "the pen should not be turned in the act of writing, but must be kept steady at a slight angle." Yciar gives clearer guidance, though he obviously had some difficulty in expressing it and adopted the formulation of an earlier Spanish scholar, Vanegas. He writes: "You must keep the pen firm in the hand without twisting or turning it between your fingers; it should always remain in the same position with your arm resting on the table. . . . The position of the pen on the

paper, when the letter is situated on the same axis as our body, should be somewhat tilted, as if the two tongues of the nib were placed on a die in such a way that the upper tongue points to the top right-hand corner, and the lower to the bottom left-hand corner." Since all faces of dice are perfect squares, the angle is 45° . Once again Mercator gets to the heart of the matter in a few words: "The pen should invariably be held in such a position that its broadest stroke would join the opposite angles of a square." In practice, an edged pen, held constantly at an angle of about 45° , produces a satisfying sense of direction, a purposeful forward motion, which, when once it becomes second nature, is helpful in mastering the inefficient, directionless instruments used today.

Letter proportions

The character of the italic hand depends greatly on the proportion given to the small letters such as *a*, *n*, and *o* and on the ovoid shape used with letters that have a bowl such as *a*, *d*, *g*, and *q*. The question of proportion is especially significant. Insofar as models reproduced from wooden blocks can be regarded as a basis for measurement, the ratio of width to height used by Tagliente and Arrighi is about 3:5. Mercator's manual contains a diagram from which it can be deduced that the ratio which he recommends is 2:3. There is thus very little difference between the masters. Palatino, however, in 1540, followed by Augustino a quarter of a century later, advocated a 1:2 proportion. This was a fundamental change. It leaves much less room for diagonal strokes; they have to be made at a sharper angle, thus increasing their width relative to the horizontal and vertical strokes. There is a considerable risk that the letters will be too sharp or angular, producing a zig-zag or saw-edge effect. It was precisely on this point that, when the crisis of the classic italic hand came in the decade that followed the publication of Palatino's book, its trenchant critic G. F. Cresci rested his argument.

The crisis was resolved in two ways. In Italy and gradually throughout Western Europe, a new style, which led ultimately to the copperplate script, supplanted the earlier italic hand; in Spain, however, primarily under the influence of Francisco Lucas, the 1:2 ratio was dropped and the former 2:3 ratio restored. This more rounded letter was the hallmark of the Spanish *bastarda*, as it was called; it had a long life in Spain and is the true successor of the italic hand despite its name.

To return now to our authorities, Fanti is not specific about proportion. "The chancery letter *a*," he says, "is derived from a quadrilateral. You must first place the pen above the line at a height which seems to you appropriate to the size of the pen which you are using. Then move the pen to the left and parallel to the writing line. When the pen has moved to half the letter-height that you have selected, then descend forthwith to the line with a curving stroke, which should make a small bend, curving not too much, but almost imperceptibly. When the pen has touched the lower line, then move it up in a straight line so that it joins the point from which you started the first stroke. Then bring the pen straight down to the line again and, turning back up again, give the letter a little of a certain movement, which is called the 'dead line' because it is almost invisible." It can be seen that the width of the letter, which is made up of the initial horizontal stroke, plus the space necessary to make the curving downstroke, must be more than half the height of the letter.

Tagliente states, "All the letters of the chancery alphabet are derived from the following oblong [*he gives a sketch consisting of four dots*]." He does not attempt to describe the ovoid body of the round letters, but again provides a little sketch, saying "You should learn first the following body-shape, which is derived from a sloping oblong. To make *a*, one places a vertical line to the right of the body-shape."

Vicentino does not analyze the construction of the letters but, like Tagliente, relies on a sketch. He observes that "All the bodies which rest on the line on which you are writing should be made so that they fall within an oblong quadrilateral, not a square [*sketch*] for, to my eye, the letter needs to be based on an ellipse rather than a circle. You will find that it will turn out to be circular if you shape it inside a square, and not an oblong." As indicated earlier, the ratio which appears to underlie the sketches drawn by Tagliente is about 3:5. In practice Vicentino writes a slightly narrower letter than Tagliente.

Palatino's evidence is crucial. He writes: "Chancery letters which have a body need to be half as wide as they are high, so that they make a double square: for if you make them within a single square, they will—so far as the proportions of their bodies are concerned, belong to the mercantile, not the chancery script." Then, as though stepping back from the abyss, he continues, "But

I don't say that it is necessary to observe these proportions each time that you have to write because that would be such a difficult and tedious business. I resolved, however, to set out this proportion, like the others which I have mentioned, for the benefit of those who wish to master every aspect of this art, both in theory and in practice. To make the letter *a*, you should begin with a horizontal stroke and with a light turn, go down with your pen, making the downstroke. Then with a diagonal turn, move up to join the horizontal and then come down again with another downstroke. . . . *Give the letter its proper roundness and elegance.*" It is significant that Palatino, who had considerable influence in the 1540's, changed his hand after Cresci had criticised its angularity, and brought it very close to the model that Cresci was advocating.

Augustino follows Palatino, but without any saving clause. "From the point of view of geometry," he says, "the true chancery letter is based on two squares, not one, if you wish to shape and write it correctly."

Yciar's testimony is ambiguous. He starts by saying that "the chancery letter, when given its correct construction and dimension, should keep to the proportion and shape of a rectangle, the height of which is *almost* twice its width," but goes on to draw a pair of parallel lines, commenting "the body of the chancery letter will be bounded by these lines so far as its height is concerned; its breadth, however, . . . will be equal to half the distance between these two lines." He repeats Palatino's reservation: "I do not mean that we must always observe this measurement in the chancery hand, but that, once we have understood the ideal proportion, we can use it as a guide and keep it as far as possible, especially when we are starting to learn it." His examples of handwriting exhibit letters somewhat more rounded than those proposed by Palatino.

There is no ambiguity about Mercator. He gives an explicit diagram (see Figure 4) from which it is plain that he favored a 2:3 ratio. In his text, he writes, "All letters that fall within the writing lines must have the same width as letter *y*, with the exception of *m*."

Ascenders and Descenders

These are the lines which go above the band of writing (as in the case of *h*) or below it (as with *g*). The elegance of a script will depend much upon their length in relation to the other letters.

Fanti recommends that "the distance between one line and another in the chancery script should be four times the height of the letter (according to the size that you intend to make); and the ascenders and descenders should be equal in length and should occupy these quarters of the space between the lines more or less." Another way of putting it might be that the distance between lines is four *x*-heights: the band of writing occupies one *x*-height, the ascenders another, and the descenders a third. Three of the four *x*-heights are thus accounted for, the fourth being divided so that half an *x*-height separates ascenders from descenders of the line above and the other half is the space between descenders and ascenders coming up from the line below. Tagliente says, "All ascenders and descenders should be of equal length;" Vicentino: "Take care that . . . all the long ascenders are of equal height . . . similarly the descenders should be of equal length;" and Palatino: "The height of all long downstrokes [i.e., *ascenders and descenders*] should be twice that of the body of the letter: they should be equal in length whether they go above or below the line." Augustino has a sketch of four parallel lines with the small letters falling between the inner pair, ascenders rising to touch the top one and descenders going down to the bottom one; later he states: "The vertical lines which extend above and below the bodies of the letters should be regularly constructed to the same height or depth." Yciar's opinion is that "All the ascenders and descenders of the long letters, whether above or below the writing line, must be of equal size, their length being measured as the sum of their body height plus that of the band of writing." Logical as ever, Mercator starts his book by asking his pupil to mark off with dividers equidistant points corresponding to the number of lines to be written and, then, having narrowed the dividers to the height of his writing, to construct pairs of parallel lines within which the written material is accommodated. Further on, he says that all the short downstrokes (such as those of *i*, *m*, and *u*) should slope equally to the right and be equal in length within the parallels. "Of the remainder, those with ascenders rising above the parallels and those with descenders are twice as long, while those that have both ascenders and descenders are three times as long." There is thus general agreement about the length of ascenders and descenders for handwriting.³

Many writing manuals today teach rather stubby models with ascenders and descenders of about half the relative length found

in the chancery hand. Since, in writing cursively, we tend to shorten long lines, it is wise to teach the classic proportions.⁴ Moreover, it is a fact of common experience that compact writing with the lines well spaced by elegant ascenders and descenders is more legible and economical than lines of fat sprawling letters separated by much smaller spaces.

Spacing of letters and words

Fanti's instructions are as follows: "Now we have to discuss the distance between one letter and another. This should be equal to the width of the black parts of the letter. For example, the space between two *n*'s should be the same as the width of its two legs when one is placed next to the other. Similarly the distance between words should be such that an *o* or *n* could fall between them." Tagliente suggests a somewhat wider space between words, advising his readers to "See that the distance between letters always equals the space between the legs of *n*. . . . The distance between one word and the next should equal the space occupied by the letter *m*." Vicentino and Palatino have a similar rule, the former writing: "Make sure . . . that the distance between one word and another is equivalent to the width of an *n* and that, as you join one letter to another, the distance between them equals the width of the white space between the legs of *n*." So, too, Augustino: "The space which should separate one letter from another should be equivalent to the white space between the legs of a well-shaped *n*. The interval or spacing between one word and another . . . is the full width of the letter *u*. These rules should be applied according to the judgement of the eye and not always by actual measurement, because it would be tiresome to measure every letter as you write." Yciar also relates his spacing to the letter *n* but to an extraordinarily narrow version of the letter. He writes: "The space between each letter should equal the distance between the legs of the *n*. And if someone should object that this still does not determine it, because the space in the middle of an *n* is not certain as we have not so far mentioned the point, I reply that the correct proportion of the white space between the legs of the *n* is that it should be as wide as the thickness of one of its legs. . . . The distance between words should equal twice the white space of an *n*, that is to say, that the space between words is double the space between letters." Mercator offers no guidance about word

spacing, but his rules for letter spacing are more sophisticated—“the distance between individual letters should be the same as that between the two downstrokes of *y*, but the distance between *c*, *e*, *f*, *g*, *r*, *t*, and *v* and the succeeding letters should be half of this.”

Capital letters

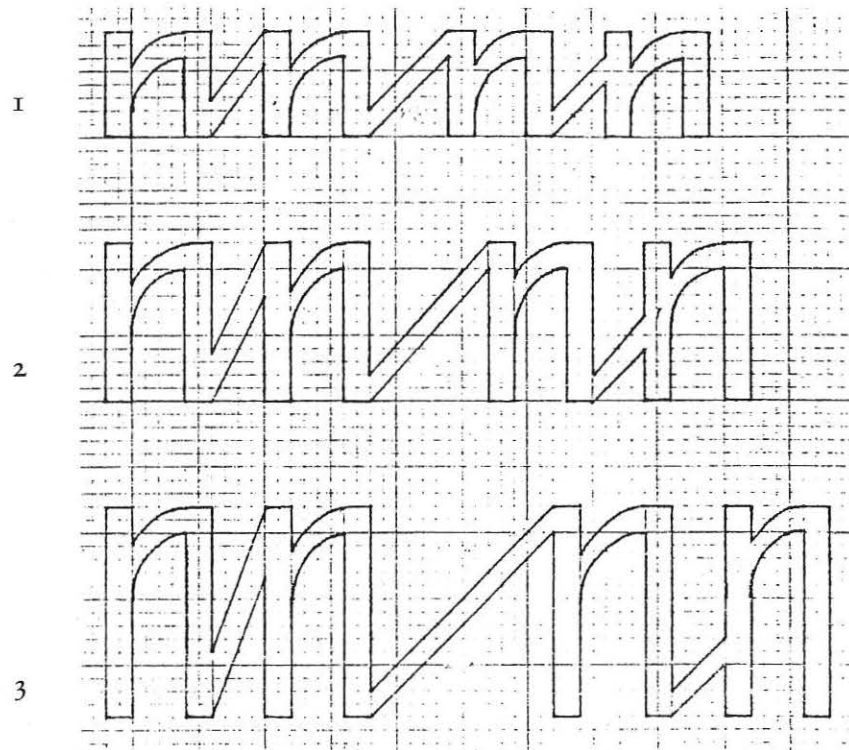
In forming the capital letters the discipline imposed by the canons which regulated the writing of minuscules was to some extent relaxed in favor of personal expression. Writing masters usually took this opportunity to display their individual skill, *élan*, and inventions. Thus we find a pleasing contrast between the legible regularity of the text and the freedom of the capital letters. The price was that writing masters could not, perhaps would not, give detailed rules for the construction of majuscules. Thus Fanti merely refers the student to his models, which, as already mentioned, were never printed, while Tagliente keeps off the subject. Vicentino says: “Write your majuscules so that they always stand upright, making them with confident, well-defined strokes with no shakiness about them. . . . It should not be a great effort for you to learn all the majuscules once you have trained your hand with the minuscules. . . . I will say no more than that you should try to learn to shape the majuscules as you find here in the example which I have written for you.” Nor is Palatino more explicit, merely stating: “The chancery majuscules are all derived from the same three basic strokes as the minuscules. But because there are no fixed rules for them, they are made according to the judgement of the eye. Note that the strokes should be lively and confident, with no shakiness.” Augustino says that the capital letters “do not have any rigid rules governing their construction because they are written in various sizes and fashions according to the way in which the quill is cut. They can be formed with a variety of strokes and they are made more rapidly with the eye than by any other method. They should always have lively confident strokes, not spoiled by shakiness or any other fault, if you want to construct them properly . . . copy the models that you see here.” Yciar, who relied extensively on earlier writers for much of his work, is at a loss: “I declare that none of the authors who have come to my notice has so far given rules for the construction of these majuscules. Battista Palatino, the most recent writer, says that there is really no fixed rule other than that you should make them accord-

ing to the judgement of your eye, copying the model alphabet which he has provided and taking pains to fashion the strokes lightly with a very steady hand.” Mercator is a trifle more helpful: “Capital letters correspond in dimension with their respective minuscules. They have the same slope to the right but can be perpendicular if preferred. Sufficient examples will be found throughout this manual and in the alphabets that follow.”

Joins

The question of joins is closely related to the proportions of letters, their spacing, and the angle at which the pen is held. Let us assume that the width of, say, letter *n* is four units (such as pen-widths), the legs accounting for two units and the white space between for the other two units. These are typical proportions for the classic chancery hand. Let us then apply the writing-masters’ canon for letter spacing, i.e., the width of the white space between the legs of *n* (or two units). If we construct on the base of four units (1) letters *n* in the proportion 1:1, i.e. four units high; (2) letters *n* in the proportion 2:3 (Mercator’s), i.e., six units high; (3) letters *n* in the proportion 1:2 (Palatino’s and Augustino’s) and line up each series of *n*’s so that a space of two units separates one from the other, it becomes immediately clear that the type of join is different in each example. Figure 6 shows the three cases in crude, schematic form, using two pairs of letters. In addition, the line connecting each of the pairs shows what happens when the bottom of the preceding *n* is linked to the top of its successor by a diagonal join of 45°; invariably the consequence is extravagant spacing. If, however, the recommended spacing is observed (as within each pair), the result is as follows. In case (1) we can join the two *n*’s diagonally without too much distortion, but the space between letters is too generous. Case (2) demands a sharper angle and therefore a thicker stroke. In case (3) the angle is so steep that the writer will almost certainly twist his pen in writing and this stroke itself will become so wide as to impair the contrast between thick and thin which is so characteristic of the italic hand. There will also be a tendency to try to make room for the join by over-sloping the same letter. It is surprising how often even the best scribes do this. The word *in* provides a good test. The choices boil down to: (a) letter spacing that will lead to a sprawling script (popular with composers of contemporary manuals, with a few honorable exceptions), (b) attempting

Figure 6. Schematic diagram to illustrate differing effects of joining letters *n* according to variations of letter proportion and letterspacing. The first join in each set is from the bottom of one letter to the top of the next with correct spacing; the second shows the spacing required for a full diagonal join from the bottom of one letter to the top of the next; the third is the result of diagonally joining correctly spaced letters. In set (1) the letter proportion is 1:1, in set (2) 2:3, and in set (3) 1:2. Note that in this diagram the letters are upright, not slightly sloped, and no account is taken of the variations in line thickness which a penhold of 45° produces.



to join at the cost of spoiling the rhythm of writing and sometimes the shape of the succeeding letter, (c) preserving moderate spacing and letting the letters join as they wish in a natural fashion—a kind of free love, if you like. On the whole the Italian writing masters tended to adopt this third solution, though not entirely.

Fanti offers little guidance. He says that the joins are made with the flick which ends such letters as *a*. When constructing it, you must give the letter a little of a certain movement which is called the “dead line” (*linea morta*) because it is almost invisible. Elsewhere he compares it to “the tail of a lion.” Note that the stroke is a short one: it cannot be used when the letters are either too far apart or too tall. Tagliente describes the stroke as a “graceful little turn which is called the ‘finishing stroke’ because it finishes off the main stroke.” He puts forward his scheme rather inadequately by illustrating how the word *magnifico* is written: “First make an *m* with its finishing stroke. Lift your pen and make an *a* next to the *m* (thus giving us ‘*ma*’). Starting from the finishing stroke of *a*, make the upper bowl of the letter *g*. After you have completed *g*, pick up the opening stroke of *n* from the bowl of *g*, and make the letter *n*. Without lifting the pen from the paper, continue the finishing stroke of *n* and make the letter *i* (this gives us ‘*magni*’). Next write the letter *f* and next to it the letter *i* in one movement (this gives us ‘*magnifi*’). Similarly continue the finishing stroke of *i* and write the first circular element of *c*, then add to *c* its head piece.⁵ Next make the letter *o* beside *c* (and this gives us ‘*magnifico*’).” The student is advised to go on “joining and linking all the letters above and below as far as you can without lifting your hand, unless you have to, until you have completed the word.” Although Tagliente’s language is imprecise, he seems to be saying that it is not necessary to try to join each letter but to allow the letters to meet as convenient.

We get more detailed instruction from Vicentino, whose proportion for small letters is roughly 3:5. He writes: “As regards the small letters of the alphabet, some can be joined to an immediately following letter and others cannot. Those that can be joined to a succeeding letter are the following: *a, c, d, f, i, k, l, m, n, s, t, u*. Of these, *a, d, i, k, l, m, n, u* may be joined to every succeeding letter: but *c, f, s, t* can only be joined with some. The remaining letters of the alphabet, i.e., *b, e, g, h, o, p, q, r, x, y, z*,⁶ must never be joined to the letter that follows. Nevertheless I leave it to you to

decide whether to join or not, provided you keep your letters even." The last six words are the acid test (Figure 7).

Vicentino then gives an example showing *a* joined to every other letter of the alphabet. In some cases, the join cannot be made without being lengthened in inadequate space and distortion follows. The junction of *im* is a case in point. Thus Vicentino, by his own example, makes it doubtful whether the letters that end like *a* should be joined to every succeeding letter. Vicentino concludes with advice for joining *d*, *f*, *s*, *f*, and *t* (see Figure 7).

With his 1:2 proportion for letters, Palatino has to face the problem in its acutest form. He commits himself to finishing letters like *a* "with a short upward diagonal stroke. This stroke serves to join and link one letter with another." He then states: "As regards the joining of one letter to another—since other authorities have written about it at great length and really in a very confused manner—I will give you this concise rule: all the letters which end in a little diagonal or a flick of the pen, such as *a*, *c*, *d*, *e* are joined to immediately succeeding letters . . . *f* and *t* are joined [by the crossbar] to all letters without ascenders." Palatino preserves the canon of spacing and the angle of his pen. In practice, therefore, most of his joins touch the succeeding letter quite low down. In principle, he is keeping to Tagliente's rule of comfortable contact.

Augustino, whose letters are constructed to Palatino's 1:2 proportion, gives four rules: "All letters which begin with a diagonal serif can, and should, be joined with the preceding and succeeding letters . . . but those that end in a crossbar, such as *f* and *t*, are joined by the crossbar to the succeeding letters. The following letters, *b*, *g*, *h*, *o*, *p*, *q* do not themselves make a join, but they may be joined by other letters. The following characters, *x*, *y*, *z* cannot be correctly attached to other letters."

Yciar refers to the "little serif," which completes letters like *a*, and "serves to connect one letter with another." Then, in somewhat fanciful language, derived apparently from Erasmus, he writes: "Some letters are on such bad terms with each other that

Saperai anchora Lettor mio che' dele'
littere' piccole' delo' Alphabeto,
alcune' si' pommo' ligare' con le' sue' segue-
ti, et alcune' no: Quelle' che' si
pommo' ligare' con le' sequenti, sonno
infra scrutte', cioe', a c d f i k l m
n s t u
Dele' quali' a d i k l m n u si' ligano
con tutte' le' sequenti: Ma c f s t li-
gano sol con alcune': Lo resto poi delo'
Alphabeto cioe' b e' g h o p q r x y z
non se' deue' ligar mai' con lra
sequente'. Ma nel liga-
re, et non ligare' ti
lascio in arbitrio
tuo, pur che' la
littera sia e-
guale'.

they absolutely refuse to join in any friendship or intercourse with others: for example, *g, h, o, p, e*. . . . Other letters are affectionate and sociable by nature and, so far as they can, they do not withhold their intimacy from any other letter. Such are all those that end with a diagonal serif, *c, d, e, l, m, n, t, u*, etc. . . . The second rule is that *f* and *t* can be joined by the crossstroke to succeeding letters."

Mercator teaches that "all letters that end in a serif rising from the lower line of writing should be joined, by prolonging the serif, to those that follow, with the exception of *c*. . . . So *e, c*, and *t*, although they finish with a hairline at the foot, cannot be joined to the following letter. So long as a crossbar does not follow, letters are connected with a single stroke of the pen . . . but when a crossbar follows, the diagonal is prolonged from the previous letter to a point a little beyond the center of the lines of writing: then you must transfer the pen to the upper line." Because of the 2:3 proportion of his small letters, Mercator has relatively more room for his diagonal joins. He prolongs them, but not as far as the top line of writing; even this is sufficient to give his models a strong diagonal movement.

The real proof of a system of joins is whether it allows the even spacing of letters standing compactly together. Unless the emphasis is put on preserving sound letterforms and this sort of spacing, joins will tend to be excessive and are likely to result in writing that is either squashed up or (more probably) flaccid, floppy, and sprawling. It slows up the writing and makes it more difficult to read quickly. Excessive joining can also become a mania. In one recent model, for example, which is claimed to be "italic," the descender of *q* has been truncated, simply to facilitate a pointless join with the succeeding *u*.

Conclusion

Such were the canons that regulated the classic chancery hand. In our own day, this hand has been revived, under the name of "italic," as a successful solution to the problems of modern handwriting. The italic models which approach most nearly to the spirit and effectiveness of the original are those of Alfred Fairbank as seen in his *Handwriting Manual* and Beacon Writing Series (Figure 8). Many of those who have subsequently tried to attract attention in this field have found it convenient to describe their

MUSIC

*Orpheus with his lute made trees,
And the mountain tops that freeze,
Bow themselves when he did sing:
To his music plants and flowers
Ever sprung; as sun and showers
There had made a lasting spring.*

*Every thing that heard him play,
Even the billows of the sea,
Hung their heads and then lay by.
In sweet music is such art,
Killing care and grief of heart
Fall asleep, or hearing, die.
John Fletcher*

Figure 8. A page from Alfred Fairbank's Beacon Writing Series (*Book Six*). The Alcuin Press, Portland, Oregon, 1978.

wares as italic when they are manifestly not consistent with the primary canons. This is not to say that such models are bad: only that they are sailing under false colors. The commonest deviations are sprawl, over-wide letters (leading to over-wide spacing), excessive slope, overstressed, redundant joins which break the rhythm of writing and impair spacing, and miscellaneous fads, presumably intended to demonstrate the author's originality. And there are those who argue that "the directionless pen is the writing tool of today" and revert to the Altamira caves or the stylus scrawl of the Roman fifth century or other remote times as irrelevant to contemporary handwriting as the Renaissance is relevant. One should never overlook a simple fact, either unknown to, or ignored by, art school innovators that Roman children learning to write with the "directionless" stylus were often taught with a directional aid. Quintilian, the greatest educationalist of antiquity, records and advocates the use of letters engraved in a woodblock, within whose grooves the pupil moved his stylus, in order to discipline the hand kinesthetically. It seems perverse, though entirely in keeping with the spirit of the age, to deprive a child of the simpler discipline of the edged pen, which will be of assistance to him in later life, when the ballpoint has been made obsolete by some other writing device, as will inevitably be the case.

1. Mercator called his manual "How to write the Latin letters."
2. Authors still write with monotonous regularity that this was "the first Italian writing-book" and that it came out in 1522.
3. Shorter ascenders and descenders might be used for copying manuscripts in a bookhand.
4. In *Il Secretario* (Venice, 1581), Marcello Scalzini wrote: "They can be readily reduced to suit a smaller letter, whereas short ascenders and descenders, once learnt, are difficult to reduce or lengthen gracefully."
5. Here *c* is made in two strokes like *e*, so neither letter is suitable for joining to the next.
6. *h*, when made by curving its second leg in a little at the bottom, does not have the diagonal finishing stroke and is, therefore, not joined.

Résumés des Articles *Traduction: Fernand Baudin*

L'enseignement et l'apprentissage de l'écriture

par Charles Lehman

L'écriture est un artisanat traditionnel parfaitement distinct ayant ses propres critères de qualité. Le choix des instruments, des techniques et des modèles appropriés pour l'enseignement d'aujourd'hui exige la collaboration d'enseignants chevronnés, de chercheurs et de praticiens disposés à mettre en commun leur expérience, leurs connaissances psychologiques, historiques et pratiques en matière de modèles, de méthodes et de matériaux susceptibles de favoriser les progrès des débutants. Les fruits de ce genre de travail d'équipe se trouvent dans les publications de quelques calligraphes et dans les programmes d'enseignement de quelques écoles.

Les enfants nous montrent comment les aider à écrire

par Donald H. Graves

L'article donne les premiers résultats d'un programme pour deux années de recherches portant sur le comportement d'enfants du primaire qui apprennent à rédiger et à orthographier et sur les mouvements qu'ils font en écrivant. Toutes les phases de l'écriture influent sur son tracé et chaque étape dans l'éducation est marquée par des problèmes particuliers. Les débuts d'un enfant dans l'acquisition de l'écriture témoignent du même manque d'organisation que ses débuts dans l'acquisition de la parole. Plus tard, lorsqu'ils choisissent eux-mêmes leurs sujets, leurs mots et leur module d'écriture, les rédactions s'améliorent. L'écriture manuelle est celle qui révèle la manière dont l'enfant opère ses choix. Dans l'expérience en cours, quelques enseignants s'efforceront d'aider les enfants à plus de netteté dans le tracé des lettres, dans l'ordre des mots, dans la séparation des mots, dans la mise en page et, plus tard, dans le "rewrite" et la prosodie.

Une méthode dynamique pour l'enseignement de l'écriture

par Iain Macleod et Peter Procter

L'ordinateur a été mis à contribution pour enseigner l'écriture au moyen d'un écran cathodique et d'un "crayon." Les exercices supposent un ordre déterminé dans la succession et dans la direction des traits ainsi que dans leur précision. Chaque trait est projeté d'abord sous forme d'un mince filet; les mouvements de crayon corrects font apparaître un tracé plus gras. Les mouvements incorrects ne laissent aucune trace. Un point lumineux montre où le crayon doit reprendre le tracé. Le bon résultat correspondra au modèle correct de l'enseignant et non pas aux maladresses de l'élève—ce qui renforce l'image du bon résultat souhaité plutôt que les erreurs de l'étudiant. Cette méthode met l'accent sur l'écriture en cours de formation plutôt que sur l'écriture formée. Elle a été utilisée avec succès notamment pour apprendre à des handicapés mentaux à donner couramment leur signature.

La cursive romaine tardive,
par Gunnlaugur S. E. Briem

Les plumes pointues qui servaient autrefois pour écrire l'anglaise imposaient certaines limites aux mouvements dans le tracé des lettres. Le stylo-bille, les pointes en nylon et en feutre se laissent conduire dans toutes les directions et ne sont pas faites pour les dérivés modernes de l'anglaise traditionnelle. La cursive romaine tardive est une écriture documentaire sans pleins ni déliés. Elle mérite examen en tant que modèle possible pour un nouvel enseignement scolaire de l'écriture manuelle.

Les principes qui gouvernent la fabrication des plumes,

par Chris Rhodes

L'auteur examine une à une les décisions techniques qui se sont imposées aux fabricants de plumes dans les cent dernières années. Il s'attarde plus particulièrement sur l'essentiel qui est: le bec de plume. Les considérations ergonomiques et esthétiques ne sont pas omises. Une solution comprenant trois profils différents, mais adaptables sur un même corps de stylo, est enfin

examinée du point de vue de l'enseignement aussi bien que du point de vue de l'industriel.

A la recherche d'une écriture pour le stylo-bille,

par Nicolette Gray

Les stylos-bille et les pointes en nylon sont radicalement différents. Cependant les uns et les autres écrivent facilement dans n'importe quelle direction. Cette particularité appelle des lettres et des combinaisons de lettres plus adaptées et plus efficaces. L'auteur rejette les modèles typographiques et les écritures dégénérées qui ont été utilisés jusqu'ici et prend les gribouillis spontanés de l'enfant comme point de départ pour une écriture cursive "tous azimuts." En combinant cette écriture avec l'enseignement de la lecture et des autres cours de langue, des habitudes de lisibilité peuvent facilement se traduire en une écriture adulte à la fois rapide, plaisante et propre à l'expression la plus personnelle. Certaines écritures du passé, la cursive romaine, la cursive gothique, la cursive anglaise de la Renaissance, offrent des exemples de rythmes contradictoires qui renforcent la thèse en faveur d'une écriture "tous azimuts." Quelques exemples d'écriture nouvelle sont proposés à titre de spécimens à interpréter expérimentalement. Une manière unique de tenir la plume ne semble pas s'imposer dans le contexte d'écritures "tous azimuts."

Les modèles de la Renaissance,

par Arthur Osley

Les maîtres d'écriture de la Renaissance ont été les instructeurs d'une foule de secrétaires qui répondaient aux besoins des états, de l'église et du commerce à l'époque des nationalismes naissants. A l'usage des autodidactes que la chose intéressait, les maîtres d'écriture ont mis à profit les plus récentes, celles de l'imprimerie, pour élaborer des manuels d'instructions systématiquement présentés et pour donner en exemple l'écriture nouvelle que les savants, les diplomates et les clercs venaient de mettre au point: *la cancellaresca corsiva*. L'auteur rassemble les enseignements de sept maîtres de la Renaissance pour examiner ce que chacun peut

avoir à dire sur les points essentiels que sont : le degré d'inclinaison, l'angle du bec de plume, la proportion des lettres, la longueur des ascendantes, l'espacement et les ligatures. Les méthodes actuellement utilisées pour l'enseignement de l'écriture italique aux enfants sont ensuite examinées quant à leur authenticité. En prenant pour critères les écritures de chancellerie de la Renaissance, l'auteur arrive à la conclusion que, parmi tous les modèles récents, ceux d'Alfred Fairbank, à savoir *Handwriting Manual* et *Beacon Writing Books*, sont les plus conformes à l'esprit des originaux.

Kurzfassungen der Beiträge Übersetzung: Dirk Wendt

Handschrift lehren und lernen
von Charles Lehman

Das Schreiben mit der Hand ist eine traditionelle Handfertigkeit mit eigenen Rechten und Gütemassstäben. Die erfolgreiche Auswahl geeigneter Werkzeuge, Techniken und Buchstabenformen für moderne Handchriftausbildung erfordert Zusammenarbeit von erfahrenen Lehrern in der Klasse, Erziehungswissenschaftlern und traditionellen Kunstgewerblern, die gemeinsam die Entwicklungspsychologie des Lernenden, die geschichtliche und moderne Entwicklung von Handschriftmodellen und die Techniken und Materialien beherrschen müssen, die zum persönlichen Erfolg in der Ausübung des Kunstgewerbes erforderlich sind. Das Ergebnis solcher Zusammenarbeit kann in den Schriften einiger Kalligraphen und in den Lehrprogrammen gefunden werden, die zur Zeit in einigen Schulen verwendet werden.

Lasst Kinder uns zeigen, wie wir ihnen helfen können zu schreiben

von Donald H. Graves

Es werden vorläufige Ergebnisse aus einem laufenden 2-Jahres-NIE-Fallstudienprojekt berichtet, bei denen die Entwicklung der ersten Aufsatz-, Rechtschreibungs- und motorischen Verhaltensweisen der Kinder

während des Schreibens beobachtet werden sollen. Die Handschrift wird von allen Phasen des Schreibprozesses beeinflusst, ebenso wie von besonderen Problemen verschiedener Stufen der Entwicklung des Schreibers. Die ersten Schreibversuche von Kindern ähneln ihren Sprachgewohnheiten in ihrem Mangel an Organisation. Später, wenn die Kinder ihre eigenen Themen, den Ausdruck und die geschriebene Form selbst wählen, werden die Aufsätze erfolgreicher. Die Handschrift ist eine Komponente des Schreibens, welche die Art des kindlichen Entscheidungsprozesses aufzeigt. Lehrer versuchen, die kindliche Handfertigkeit zu grösserer Deutlichkeit beim Formen der Buchstaben, bei der Ordnung und Trennung der Worte, Aufteilung der Seite, und später beim Neu-Formulieren und in prosodischen Techniken anzuregen.

Ein dynamischer Ansatz zum Schreibunterricht

von Iain Macleod und Peter Procter

Es wird ein computer-unterstütztes System zum Schreiben-Lernen vorgestellt, das mit einem Bildschirm und einem mit der Hand gehaltenen Stift arbeitet. Bei den Übungen muss die geforderte Folge von Strichen in der vorgesehenen Reihenfolge und Richtung und innerhalb vorher eingestellter Genauigkeitsgrenzen ausgeführt werden. Bei der einfachsten Darbietung wird für jeden Strich eine dünne Führungslinie vorgegeben; der Computer reagiert auf richtige Schriebstiftbewegungen, indem er eine dickere Spur dahinter erscheinen lässt. Falsche Stiftbewegungen werden ignoriert; stattdessen leiten aufblinkende Punkte die Aufmerksamkeit auf die Stelle, wo der Stift sein sollte. Das Ergebnis sind die wohlgestalteten Beispiele des Lehrers und nicht die tatsächlichen Striche des Schülers. Dadurch wird das Bild des gewünschten Bildes bekräftigt und nicht die möglicherweise schlecht geformten Versuche des Schülers. Das System fördert den Prozess der Entwicklung von Schreibschrift ebenso wie die Erscheinung des Endprodukts, und in einer Anwendung wurde es benutzt, um intellektuell minderbegabten Schülern flüssige Unterschriften beizubringen.

Die spätrömische Kursivschrift
von Gunmlaugur S. E. Briem

Entwürfe mit den historischen spitzen Stacheln, die benutzt wurden zum Beschreiben von Kupferplatten, waren in den Bewegungsmöglichkeiten zur Gestaltung der Buchstaben beschränkt. Der Kugelschreiber und die Filzschreiber können in jede Richtung schreiben und passen nicht zu dem Bewegungsmuster, das die moderne Handschrift von der Kupferplatte geerbt hat. Die spätrömische Kursive, eine einzeilige Dokumentarhandschrift, wird auf alternative Lösungen zur Reformation von Handschriftmodellen für Kinder untersucht.

Grundsätze zur Gestaltung einer neuen Art Schreibgeräte
von Chris Rhodes

Es werden die Möglichkeiten analysiert, die der Gestalter von Schreibgeräten hat, angefangen mit einem Rückblick auf die technischen Entwicklungen in der Gestaltung von Schreibwerkzeugen während des letzten Jahrhunderts. Besondere Beachtung findet die wichtigste Einzelkomponente des Geräts, die Spitze. Es werden sowohl technische Kriterien, ergonomische und ästhetische Gesichtspunkte berücksichtigt als auch die Endgestalt—drei verschiedene Schreibspitzen-Gestaltungen in gleichartigen funktionalen Geräten—mit besonderer Berücksichtigung der Bedürfnisse in Industrie und Unterricht untersucht.

Zu einer neuen Handschrift, die dem Kugelschreiber angemessen ist

von Nicolette Gray

Moderne Kugelschreiber und Filzspitzen-schreiber sind in Entwurf und Konstruktion radikal verschieden, und sie lassen sich leicht in alle Richtungen bewegen. Die Fähigkeit zur Bewegung in alle Richtungen fördert die Entwicklung bequemerer und wirksamerer Buchstaben-Entwürfe und -Kombinationen. Typographische Modelle und abgegriffene Schreibschriften-Formen, die für formelle Schriften in der Vergangenheit benutzt wurden, werden verworfen. Stattdessen wird das natürliche Gekritzeln von Kindern zum Anfangspunkt einer Schreibschrift für alle Richtungen gewählt. Durch Integration solcher Handschriften

mit dem Leseunterricht und anderen Sprachkünsten kann die Gewöhnung an lesbare Handschriften leicht in eine Erwachsenen-Handschrift übergehen, die sich als schnell, angenehm und hinreichend flexibel für individuelle Ausprägungen charakterisieren lässt. Gewisse historische Handschriften, die spätrömische Kursive, Gothische und Secretary, bieten Beispiele gegenläufigen Rhythmus, die dem Ziel der Bewegung zur Handschrift in alle Richtungen entgegenkommen. Spezifische neue Modelle werden für die moderne Handschrift nur als vorläufige Entwürfe dargestellt. Experimentelle Erprobungen werden angeregt, Standardtechniken der Federhaltung werden in Frage gestellt zugunsten neuer Möglichkeiten, die dem Ansatz zum Schreiben in alle Richtungen entsprechen.

Schreibregeln der Renaissance
von Arthur Osley

Aufgrund des wachsenden Bedarfs an Handgeschriebenem im Dienste der Regierung, Kirche und des Handels, die mit dem modernen Nationalismus aufblühten, gerieten die Schreibkünstler der Renaissance in die Rolle von Lehrern für viele Sekretäre. Um interessierten Schülern den Selbstunterricht zu ermöglichen, benutzten die Schreibkünstler die letzten technischen Entwicklungen des Druckgewerbes, um systematisch zusammengestellte Handbücher zum Unterricht zusammenzustellen, und verwendeten die neu entwickelte Schrift der Gelehrten und Kleriker, die *cancellaresca corsiva* für den Lernprozess. Die Lehren von sieben Renaissance-Schreibkünstlern sind zusammengestellt, um einzeln zu untersuchen, was die Künstler über solche elementaren Bestandteile der Schrift wie Neigung, Federhaltung, Buchstabenproportionen, Höhe von Oberlängen, Zwischenräume und Verbindungen zu sagen hatten. Die modernen Systeme kursiver Handschriften, die zur Unterrichtung der Kinder verwendet werden, werden hinsichtlich ihrer Authentizität untersucht. Durch Anwendung der Schreibregeln der Renaissance aus der klassischen Kanzlei-Handschrift stellt der Verfasser fest, dass diejenigen modernen

kursiven Modelle, die dem Geist der Originale am nächsten kommen, die von Alfred Fairbank in seinen Büchern *Handwriting Manual* und *Beacon Writing* sind.

Resúmenes de los Artículos Traducción: Ana Fisch

Enseñando y aprendiendo el arte de la letra
por Charles Lehman

La letra es un arte tradicional de por sí con su propio criterio de calidad. La selección exitosa de las herramientas apropiadas, técnicas y diseño de letras para la enseñanza de letra moderna requiere una colaboración de maestros experimentados, investigadores de la enseñanza y artesanos tradicionales para compartir su entendimiento de la psicología desarrollada por el estudiante, el desarrollo moderno e histórico de modelos de letra y las técnicas y materiales necesarios para la pericia requerida para ejecutar el arte. Los resultados de tal colaboración se encuentran en los escritos de algunos calígrafos y en los programas de instrucción corrientemente usados en algunas escuelas.

Dejemos a los niños mostrarnos cómo ayudarles a escribir
por Donald H. Graves

Se presentan hallazgos preliminares del corriente caso de estudio de dos años NIE observando el desarrollo en el deletreo, la composición, el comportamiento motor de niños de escuela primaria durante el proceso de la escritura. La letra se ve influenciada por todas las fases del proceso de la escritura y por problemas únicos en las diferentes etapas del desarrollo del escritor. Los primeros esfuerzos de los niños en la escritura se parecen a los hábitos de lenguaje en su falta de organización. Más tarde cuando los niños eligen sus propios temas de composición, el formato, el lenguaje de expresión, las composiciones se vuelven más exitosas. La letra es un componente de la escritura que ilustra la naturaleza de los procesos de tomar decisiones en los niños. Los maestros

tratan de guiar al arte de los niños hacia una mayor claridad en el dibujo de las letras, el orden de las palabras, la separación de las palabras, la fijación de las páginas y luego, en el reescribir y en el uso de técnicas prosódicas.

Enfoque dinámico en la enseñanza de destreza en la letra
por Iain Macleod y Peter Procter

Se ha desarrollado un sistema basado en computación para enseñar destreza en la letra utilizando una pantalla gráfica como muestra y una mano sosteniendo una pluma. Los ejercicios pueden ser completados sólo ejecutando la requerida serie de rasgos en un orden y dirección específicos y dentro de una exactitud pre-establecida. En la presentación más simple una tenue línea-guía aparece para cada rasgo; la computadora responde a los movimientos correctos de pluma dejando detrás una marca más gruesa. Los movimientos de pluma incorrectos son ignorados y un punto destellante señala el lugar donde la pluma debería estar. El modelo visual resultante es más bien un ejemplo para el maestro que los actuales rasgos del alumno, reforzando así la apariencia del resultado deseado en vez de las tentativas posiblemente deformadas del estudiante. El sistema enfatiza el proceso usado en crear la escritura cursiva así también como la apariencia del producto y, en una aplicación se lo ha usado para enseñar cómo se firma con fluidez a estudiantes intelectualmente desventajados.

Los principios detrás del diseño de una nueva serie de plumas
por Chris Rhodes

Se analizan las opciones abiertas a los diseñadores comenzando con un resumen de los desarrollos tecnológicos que han tenido lugar en el diseño de plumas en el último siglo. Se da especial énfasis al componente más importante de la pluma: la plumilla. Se considera tanto el criterio técnico como lo ergonómico y lo estético y se explora, con especial referencia a las necesidades de la industria y la educación, el diseño final—tres configuraciones separadas de plumillas en cuerpos funcionales idénticos.

La antigua cursiva romana
por Gunnlaugur S. E. Briem

El diseño de las plumas históricas puntia-gudas utilizadas para escribir láminas de cobre limitaban la serie de movimientos que confeccionan modelos de letras. El bolígrafo y las plumas de fibra pueden escribir en cualquier dirección y no se ajustan al modelo de movimiento que la letra moderna heredó de la lámina de cobre. La antigua cursiva romana, una mano monolínea documental es analizada para soluciones alternativas en la reconsideración de modelos de letras para niños.

Cánones de la letra renacentista
por Arthur Osley

Debido a que la necesidad de la letra para el servicio del gobierno, la iglesia y el comercio ha aumentado al florecer ellos en su nacionalismo moderno, los maestros de la escritura renacentista se encontraron a sí mismos cumpliendo un papel de instructores de un número de ministros. Para proveer de auto-instrucción a los estudiantes interesados, los maestros de la escritura utilizaron los recientes desarrollos técnicos de la imprenta para crear sistemáticos manuales coordinados para la instrucción y usaron la recientemente desarrollada escritura de eruditos, diplomáticos y fieles, la *cancellaresca corsiva*, para el proceso de la instrucción. Las enseñanzas de siete maestros de la escritura renacentista son agrupadas para examinar separadamente lo que los maestros tenían para comentar sobre los elementos básicos de la escritura como la inclinación, el ángulo, la proporción de la letra, la longitud, los espacios y las uniones. Los sistemas modernos de letra itálica usados en la enseñanza de niños son examinados en términos de su autenticidad. Al aplicar los cánones renacentistas de la clásica mano cancellaresca, el autor determina que los modelos itálicos modernos que se aproximan al espíritu del original son aquellos de Alfred Fairbank como se ve en sus libros *Handwriting Manual* y *Beacon Writing*.

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