

elements in various examples of print. Also, the subject matters I chose for my writing pictures were such that immediate readability might indeed have been a distinct disadvantage. The personal involvement created in the gradual decyphering of the poems helps the desire to learn more about them. The visual experience gained by looking at the pictures is one of reviving a mental experience which one has already savoured and enjoyed in the past when reading the poem elsewhere. The trick of obscuring a message in order to enhance its interest is, of course, frequently employed in advertising.

To the student it is interesting to see how the pattern-forming elements in letter arrangements counteract rather than aid legibility. This realization helps him to make decisions on his treatment of printed texts. He learns to separate those texts which appear as decorative elements from the ones which require immediate assimilation.

The illustrations which you see here fulfil the purpose for which they were devised only partially. As I got down to the task, the subject matter itself made demands of its own. The texts which I chose for the experiments suggested their own solutions and limitations, so that I found myself to some extent in the position of the sourcerer's apprentice—no longer fully in control but at the mercy of the spirits he has invoked. Eventually I caught myself producing designs not for the sake of making a particular point but for the love of the thing itself.

The results are open to various criticisms. What isn't? The lettering expert will find that individual characters lack the precision which the craftsman who produces prototypes for mass reproduction must demand of himself; the historian will find that I have not strictly followed any known manuscript hands, although I have borrowed much from them; the interpreter of the texts may have very different ideas to those I have emphasized. I may have different ideas myself—tomorrow.

What you see is a plan, an idea, an impulse, some hours of joy and expectation, a mental apprehension of the unforeseen and unexpected and a reverence for that section of the past which presented us—in love and patience—with visual thoughts of beauty.

## Cresci and His Capital Alphabets

Donald M. Anderson

Renaissance art was marked by a vigorous adaptation of classical themes, and in restyling roman capital letters no one approached the excellence of Giovan Francesco Cresci. In *Il perfetto scrittore, parte seconda*, published in 1570, Cresci mastered the combination of classical elements with his own refined style. In contrast to those who were obsessed with *divina proportione* and who sought to interpret the roman letters through compass and rule, Cresci's alphabets were derived from ancient sources such as the inscription on Trajan's column. The drift in Cresci's thinking toward a closer allegiance to the classical letters is shown through his selection of proportion; his serifs show modification to forms closer to calligraphy.

It is now just 400 years since Giovan Francesco Cresci's *Il perfetto scrittore* first appeared in Rome. And yet there is little knowledge about Cresci's life that adds significantly to that which can be deduced from his published works. As indicated in the title pages of *Il perfetto scrittore*, Cresci was a citizen of Milan. His family was well connected. A. S. Osley (1968), working from the few clues available, believes the date of Cresci's birth was near 1534. A youthful Cresci appeared in Rome early in the 1550s and was appointed scriptor to the Vatican library in 1556; a second appointment with the Sistine Chapel came four years later. In these appointments Cresci no doubt sharpened his skills in the Chancery cursive style of writing in development before 1500 and featured in the writing manuals of Ludovico degli Arrighi, Giovanantonio Tagliente, Giovanbattista Palatino, and others. A good many plates in Cresci's first writing manual were devoted to the *cancellaresca*, and his reputation as an innovator in this form brought him into a rather bitter word confrontation with an older expert, Palatino—but that is another story.

The first of Cresci's manuals, *Essempiare di più sorti lettere*, was published in Rome in 1560. If, as seems reasonable, the 53 plates of *Essempiare* were in preparation for a year or two, Cresci might have

been 24 or 25 years of age when his first roman capital alphabet was drawn and converted to plates. This alphabet appears at the end of *Essemplare*, 24 letters, with Y appearing in two versions. Two blocks prepared by Francesco Aureri of Crema for the presentation of Cresci's first interpretation of the ancient roman capitals are reproduced in Figure 1. Letters appear white on a dark field, which means that Aureri cut them intaglio, below the surface of end-grain slabs of wood. This method of letter reproduction and its hazards were no doubt the principal consideration in Cresci's decision to print the capital letter blocks in *Il perfetto scrittore* twice. Some brief explanation of Renaissance printing techniques will illuminate the problem Cresci confronted.

In Europe letters and illustrations were combined in relief-cut wood blocks before the use of metal types—the so-called block book. Gutenberg's method of letter production in relief metal, and the spread of it, had led to the death of the block book by about 1480, but large initial letters, decorative borders, and illustrated material of all kinds continued to be cut in wood and used with metal types.

The method of the block book was revived, however, in the first writing manual, *La operina* by Ludovico degli Arrighi, published in Rome in 1522. The whole of this manual was cut on wood blocks without the aid of metal types. An addition to this, Arrighi's *Il modo de temperare le penne*, was published in 1523, with the essay material accompanying the wood-cut writing specimens set in italic types of Arrighi's design. After 1523 writing manuals were produced in a combination of wood-cut and metal type relief images, until Giulio-antonio Hercolani issued his *La scrittor' utile* (1574) with writing specimens cut intaglio in copper plates.

The intaglio wood method employed by Cresci and Aureri in Cresci's capital alphabets of 1560 and 1570, with letters reading white on a black field, is first observed in writing manuals in Arrighi's *Operina*, where in a single usage it appears in a fine little colophon (Fig. 2). In *Il modo de temperare le penne* Arrighi's usage of the engraved method increased to eight examples, with several alphabetic presentations seen white on black, notably two blocks presenting Arrighi's version of proper roman capitals. These are reproduced here (Fig. 3) to establish Cresci's models in method of alphabetic presentation, and also to introduce one of several letter traditions that Cresci was heir to.

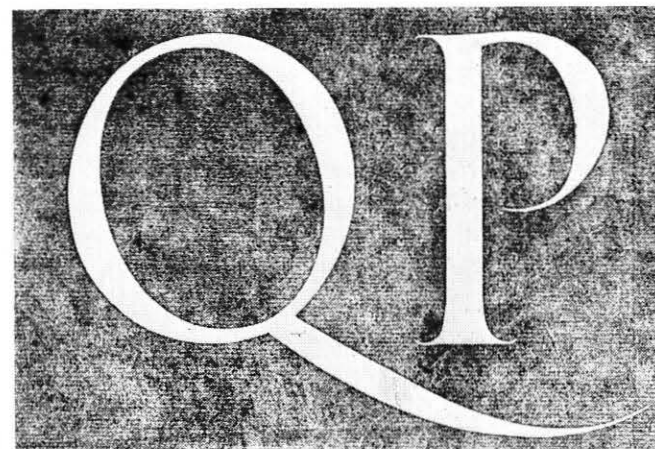


Figure 1. Alphabetic plates from *Essemplare di più sorti lettere*, 1560. The Newberry Library, Chicago.

Figure 2. Arrighi's colophon from *La operina*, 1522. The Newberry Library, Chicago.



As we may see in the reproduction of four of Cresci's 1560 letters (Fig. 1), his first rendition of the roman capitals does indeed communicate power in graphic content. They are sturdy letters, strong and handsome, with a proportion of one to eight in stem width to height. Serifs are very generous and end in a little calligraphic curl. These flourished serifs are attached to stems which are rigidly parallel, and these two characteristics give Cresci's 1560 alphabet a unique character. In Cresci's treatise on the roman letters that precedes the plates of *Essempolare*, tribute was paid to ancient Latin inscription capitals for exemplifying "the origin and basis of perfect writing." In the design of B, Cresci cited the example to be observed in "that fine inscription at the foot of Trajan's column." Cresci had in fact at that early age studied the ancient forms quite carefully, and the curve and bowl formations fairly reflect Roman inscription calligraphy. The pleasant asymmetry of the counter forms of the roman B are also seen in Cresci's B.

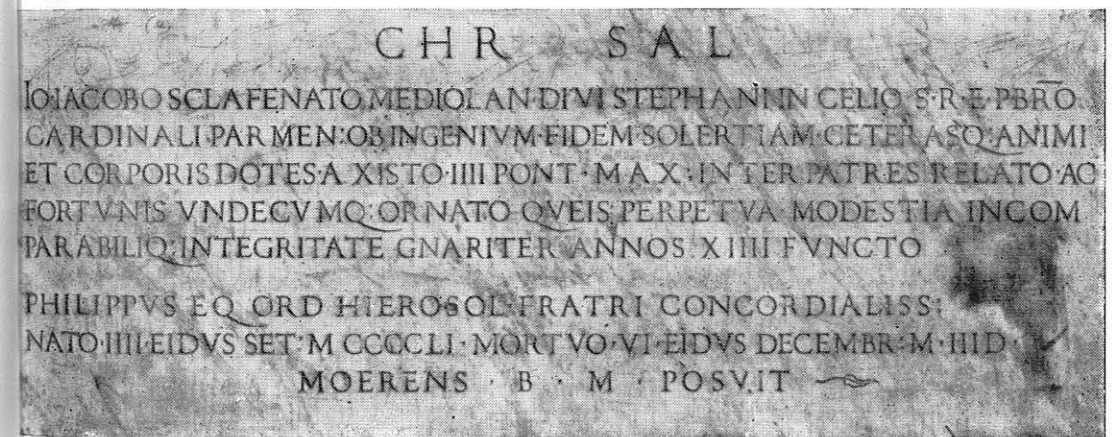
Cresci held fine appointments and he was skillful. He broke no new ground in modesty, but exemplars are few in that era. Rather, he reflected his times in Cresci on Cresci, stating that the simple truth concerning the ancient letters could be found in his essay in *Essempolare*, in which he places himself as that authority who explains the true and fixed rules of the ancient capitals in spite of the enmity of rivals who seek "to bite me with the tooth of envy." Thus in his early career Cresci had already attracted real and imaginary adversaries, and acquired that arrogance which so marked the utterance of later writing masters that Isaac D'Israeli paused to dissect them in a choice essay in *Curiosities of Literature*.

Cresci undoubtedly overstated his case in the 1560 manual, and the 1560 capitals contain many features which differ from the calligraphy of the Empire stones. His treatment of serifs, for instance, varies from the older letters, and there seems no comparison between the letters of *Essempolare* and the Roman inscriptions available to Cresci that could give a paleographer the palpitations of discovery. Nor does it seem likely that the Cresci alphabet of 1560 can be derived from inscription styles of the Renaissance, which, particularly after Alberti's effort on the façade of Santa Maria Novello in Florence in 1456, evince the clear imprint of the Empire letter in skilled imitation. This may be seen in our reproduction of the inscription on the tomb of Cardinal



Figure 3. Arrighi's capital alphabet from *Il modo de temperare le penne*, 1523. The Newberry Library, Chicago.

Figure 4. Letters from the tomb of Cardinal Sclafenati, in Rome c. 1497. Alinari photograph.



Jacopo Sclafenato, who died in 1497 (Fig. 4). Sclafenato's inscription was produced by the workshop of Andrea Bregno, who in the last third of the fifteenth century was influential in the use of the Imperial inscription form. It should be noted that the elimination of the medieval letter and the acceptance of the Trajan model was complete in Rome by 1500, long before Cresci drew his *Essempolare* capitals.

It is quite likely that the vigorous letters in *Essempolare* are only in part derived from inscription sources. The serif treatment is very much like that seen in Arrighi's capitals. Perhaps this earlier Vatican scribe suggested, in the letters of *Il modo de temperare le penne*, how Cresci might draw his own letters in his own way, for they are unique.

Of the various essays in *Essempolare*, that part devoted to the capital letters was a defense of Cresci's own views in deriving his style from that of the ancient letters and at the same time an attack on those who sought to interpret these honored letters through compass and rule. The letters and the essay in *Il perfetto scrittore* may be said to complete his views on the subject.

Cresci did not like compass derivations, and in so stating he dismissed the entire log of respected humanistic lore on ancient decrees of proper proportion. Interest in these matters had been prefaced by a return of ancient mathematics to Europe through translations of Arabic manuscripts into Latin in the twelfth century. Humanistic scholarship of the fifteenth century became deeply involved in Euclid and in arithmetical operations and algebraic methods. A part of this, peripheral perhaps to the advancement of arithmetic, geometry, and algebra in their purest propositions, was that part of descriptive geometry called perspective. First outlined in the classic work of Vitruvius Pollio, *De architectura*, the subject was again taken up by Leon Battista Alberti, who presented his first views on perspective in 1446, in *Della pittura*, with his pyramid of rays running from the eye to the object and intersecting an intermediate picture plane, as it is called in our day. *De prospectiva pingendi* (c. 1478), Piero della Francesca's more detailed work, went into the tedious documentation of rules and also offered brilliant graphic representations, including strange projections of column capitals and human heads. There followed the skilled projections by Albrecht Dürer, of which the

circular helix or spiral staircase is of classical order. This background helps to explain the tools and methods of drawing available to those who constructed roman capitals in the Renaissance. In matters of proportion these men mainly relied on the measures outlined by Vitruvius, the talented Greek practitioner of Roman engineering, architecture, and what have you.

No doubt a central part of the holy science of Vitruvius in the Renaissance times derived from Euclid, in the concept of the square inscribed in a circle and the circle inscribed in the square. Apparently Vitruvius added certain elements, derived from older sources, that impressed a number of Renaissance scholars and artists. This is most evident in the famous drawing by Leonardo da Vinci deriving from *De architectura*, Book III, Chapter I: "Then again, in the human body the central point is naturally the navel. For if a man be placed on his back, with his hands and feet extended, and a pair of compasses centered at his navel, the fingers and toes of his two hands and feet will touch the circumference of a circle described therefrom."

These ideas from Vitruvius, a practical man, invaded the thinking of later practical men, who included them in ideas concerning the construction of roman letters. This particular theme is an invading premise in many of the constructed alphabets of the Renaissance. For example, the writing manual published by Giovam Baptista Verini, his *Luminario* (1526), featured a representation of the Vitruvius figure (Fig. 5) that should tempt a diagnostician.

The first Renaissance treatise which attempted to relate roman capitals to classical lore was created by Felice Feliciano in about 1460.<sup>1</sup> This alphabet exists in the Vatican Library (Ms. Vat. lat. 6852) and was not printed in its own time. Feliciano's manuscript rationale appears beneath each letter. His version of the roman capitals used a main stroke of one to ten in stem width to height. This undoubtedly stems from Vitruvius too, who remarked that the Greeks considered it a perfect number: "Again, while ten is naturally perfect, as being made up of the fingers of the two palms, Plato also held that this number was perfect because ten is composed of the individual

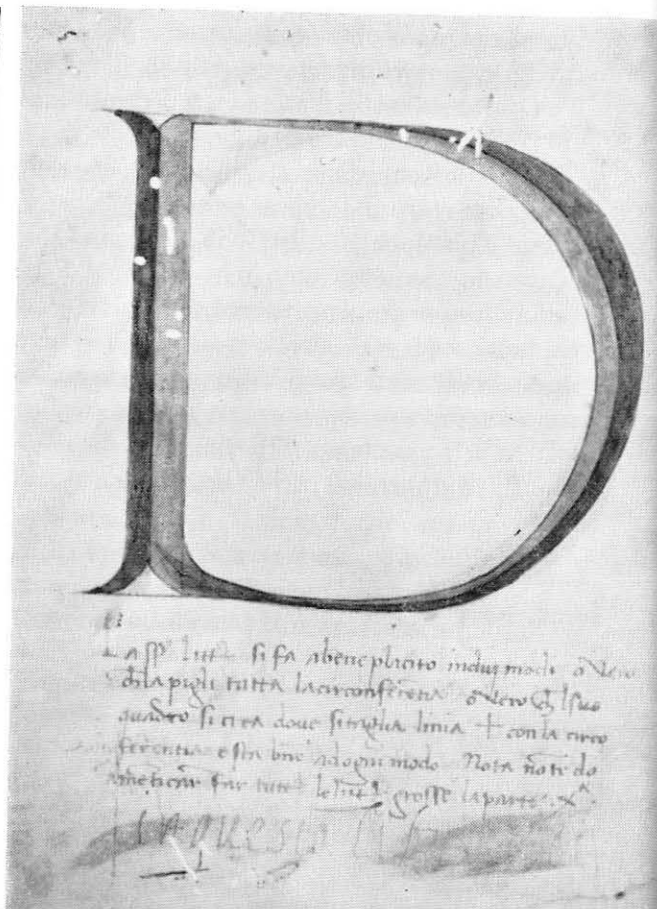
1. See also Millard Meiss, "The First Alphabetical Treatises in the Renaissance," *JTR*, III (January 1969), 3-30.

units, called by the Greeks *monades*. But as soon as eleven or twelve is reached, the numbers, being excessive, cannot be perfect until they come to ten for the second time."

Of course, this particular measurement was available from ancient inscription capitals *in situ*, and Feliciano had considerable experience in copying the ancient letters. One instance of his participation is recorded in "*Jubilatio*," quoted in Paul Kristeller's *Andrea Mantegna* (1902), wherein the two friends, Feliciano and Mantegna, toured the shores of Lago Garda with companions, obtaining 22 inscription copies before or during festivities of lesser scholarship. Feliciano said that he had measured the ancient letters and no doubt he had. The persistence of the mythology of Vitruvius in the constructed alphabets of the Renaissance suggests that having indeed measured the ancient letters Feliciano and others found only a happy confirmation of what Vitruvius had said, whereas in reality the pragmatic brush callig-

Figure 5. Vitruvius figure from Verini's *Luminario*, 1526. Biblioteca Nazionale Centrale, Florence.

Figure 6. The D of Felice Feliciano, c. 1460. Biblioteca Vaticana, Rome.



graphy of Roman inscriptions seems to have developed without the benefit of Vitruvius or any other theoretician on proper proportion. Feliciano's alphabet and text is a marvelous document, because the author was not sufficiently skilled in writing (or drawing, for that matter) to have hidden the fact that the doctrine of Vitruvius and what he observed around Lago Garda and elsewhere were in conflict. His pitiable attempts to reconcile the two views should have warned more learned men who failed the same test.

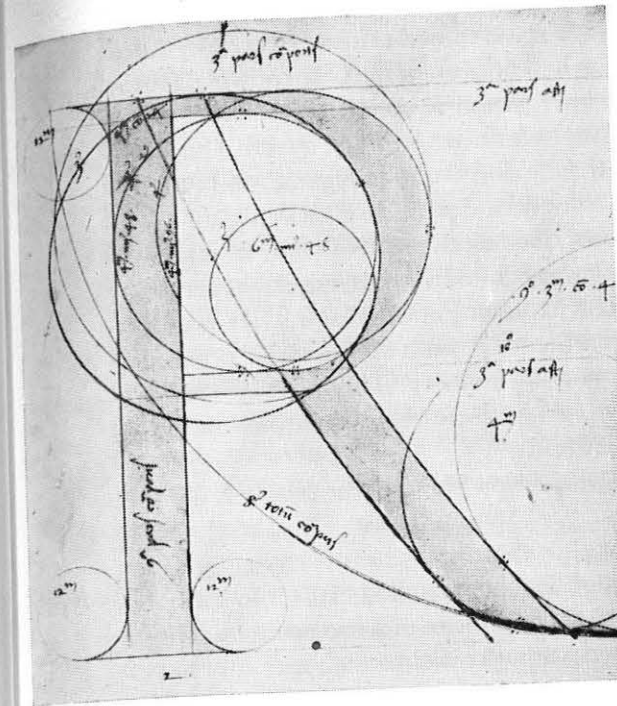
The format which Feliciano initiated for the explanation of the ancient Roman capitals was the square and inscribed circle with diagonals from the corners of the square. The diagonals made by connecting the corners of the square were not of much use to Feliciano but he did use one of them to establish the stress angles of O and Q—a decision which should have astonished any *marmorarius* of the day. One consistently weak part of Feliciano's theory resides in his thinned transversals. It is hardly possible that he could have observed this feature in the horizontal strokes in ancient inscriptions, and so it must be assumed that these too are a feature derived from classical lore on proportion. Were these one-fifth the width of vertical stems and so a part of the Vitruvius mystique? In any case, these decisions of Feliciano left him vulnerable, although in one instance, the K, he was successful. In stretching K into a square format, Feliciano showed genuine imagination. He produced an interesting letter, which depended on his ability as a calligrapher, but not a letter that a carver could have used. Other instances are less happy, for example, letter D (Fig. 6). Feliciano believed he could stretch this form into a square but, as is clear, his thin transversals left him without a chance to succeed. Curiously, Feliciano made an acceptable R (in fact two of them) and explained that the *soprascripta* of R was in great part determined by P. It was the tail or *coda* of R that proved to be difficult, and Feliciano declared that it could not be perfectly achieved by the compass. He was undoubtedly correct in this view, and explained further that it was necessary to experiment many times in order to draw a coda well. His alphabet survives as a monument to a losing struggle with Vitruvius, the compass, and the ancient Roman inscription letter.

The next treatise on constructed letters and the first to be rendered on wood blocks and printed was by Damiano da Moyle (1480). This

author preferred a proportion of one to twelve in stem width to height, a relationship which may also be devised from Vitruvius "On Symmetry": "The mathematicians, however, maintaining a different view, have said that the perfect number is six, because this number is composed of integral parts which are suited numerically to their method of reckoning. . . . Finally, twelve, being composed of the two simple integers, is called double (Book 3, Chapter 1, No. 5)." The da Moyle alphabet presented letters A, C, D, G, H, M, N, O, Q, and V in the square and inscribed circle, but differing formats explained thirteen other letters. Da Moyle also used a 45° diagonal to establish the stress angles in O and Q, thus perpetuating Feliciano's gross misinterpretation. Details in some of da Moyle's letters were described in the arbitrary terms of the ruler, which was neither Vitruvius nor inscription calligraphy. The transversals of his E ended on seven, six, and eight of a twelve-unit division of the square. Da Moyle forced his D wide, nearly square, and this letter is more acceptable than Feliciano's D.

Da Moyle's uninspired alphabet had about it a measure of consistency for which the author deserves full credit. Cut on blocks, da Moyle's alphabet was an expression of the limitations of this medium. Compass skills of this period are best observed in original manuscripts, and the second such expression devoted to roman capitals is the anonymous Newberry manuscript dated some time before 1500. From this manuscript alphabet letter R (Fig. 7) demonstrates the manner in which original calligraphic serifs were interpreted by an individual skilled in the use of the compass. As may be observed, the coda of R, which disturbed Feliciano, is in this example delineated by intersecting compass curves of very large radii. This extended effort did not improve the tail. The letters in the Newberry manuscript are sturdy, with a proportion of one to nine in stem width to height. Millard Meiss reminds us that this too may derive from a classical proportion, the Platonic as outlined in the *Timaeus*. Presumably the author of the Newberry manuscript capitals would have known of this. The Newberry alphabet is unique in its clarity of intention but its apparent sophistication should not blind anyone to the fact that its letters are, in the view of the veteran calligrapher James Hayes, ugly. Few would care to dissent.

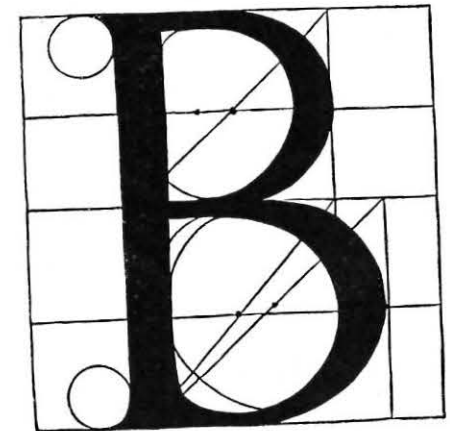
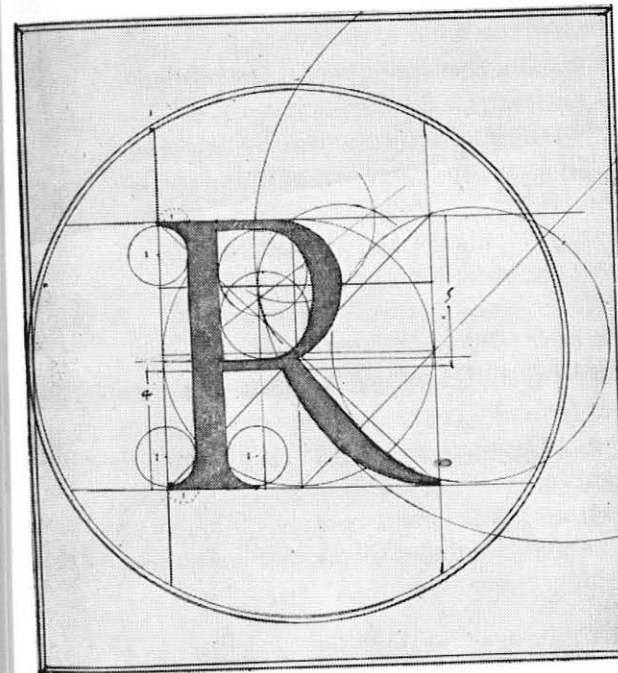
The author of the Newberry capitals omitted the square and in-



LEFT  
Figure 7. Letter R  
from Anonymous Newberry,  
dated prior to 1500.  
The Newberry Library, Chicago.

LEFT BELOW  
Figure 8. Palatino's  
manuscript R, c. 1550,  
Kunstbibliothek, Berlin.

BELOW  
Figure 9. Pacioli's B  
in *De divina proportione*, 1509.  
Grolier Club facsimile,  
New York, 1933.



scribed circle but this usage was restored in a printed treatise by Luca Pacioli, a mathematician who had published the best known algebra of the period, *Summa de arithmetica, geometria, proportione et proportionalita*, in Venice in 1494. Capitals drawn by Pacioli were a part of *Divina proportione*, a work otherwise devoted to polygons, solids, and a ratio known as the golden section, and published in Venice in 1509. Pacioli used the square and inscribed circle in all of his letter structures excepting B and S (no Z was printed). Like a good teacher, Pacioli presented a short text of explanation with each letter in the prescribed manner. The first sentence of most of these texts proceeded in the manner of that accompanying letter I: "This letter is made from the circle and the square and its thickness must be one-ninth; so that it is easier to make than others."

Thus Pacioli also used the proportion found in the Newberry letters. There are other similarities between the two alphabets; the two R's are practically identical, including the use of large compass curves to form the tail. Although Pacioli stretched his D into a square with moderate success, his alphabet, in terms of a successful meshing of the Vitruvius lore with observation (a task in which he might have been expected to excel), is as coarsely pedantic as any other. Pacioli's B (Fig. 9) demonstrates that units of nine widths should suffice as well as any other to explain the bowls of this letter so subtly achieved in many Roman inscriptions. In placing *Divina proportione* in its proper historical niche, mathematics historian Carl B. Boyer states in *A History of Mathematics* (1968) that the letters are noteworthy for their excellence. It is to be hoped that some other way can be found to honor Pacioli.

Other methods of constructing roman capitals followed. Sigismondo Fanti produced the next version in his *Theorica et pratica . . . de modo scribendi . . .*, published in Venice in 1514. Another was published by Francesco Torniello in Milan in 1517, *Opera del Modo de Fare le Littere Maiuscole Antique*. Albrecht Dürer's well-known version of the roman capitals appeared in *Underweysung der Messung* (1525). Dürer presented alternatives in proportions embodied in the letters and details of form, describing three differing A's. His approach to the roman capitals was perhaps more subtle than some others, although he extolled the virtues of the compass as a tool. Still another constructed alphabet was presented by Giovam Baptista Verini in his

*Luminario* of 1526. Verini's method was strong in compass theory and his instructions were fairly complete.

Geofroy Tory's constructed alphabets appeared in the famous *Champ Fleury: L'art et science de la proportion des lettres* (1529). Tory followed the Vitruvius-Leonardo line of thought in relating the human figure to the square and inscribed circle. He also attempted to relate the human figure to the capital letters and the square and inscribed circle, going so far as to draw faces in O and OI combined. In constructing the capitals, Tory used a grid system of one hundred squares. Thus his central proportion was one to ten in stem width to height—derived from the nine Muses with Apollo added. Tory not only attempted to relate ancient capital letters with Vitruvius but threw in generous portions of classical mythology and any other idea that came to hand. Here is his commentary on letter Q:

This letter Q is the only one of all the letters that goes below the lowest line, and I have never been able to find a man who could tell me the reason therefor; but I will tell it and set it down in writing. I have thought and meditated so much on the shape of these Attic letters that I have discovered that the Q extends below the line because he does not allow himself to be written in a complete word without his trusty comrade and brother V[U], and to show that he wishes to have him by his side, he embraces him with his tail from below, as I shall draw him hereafter, in his turn.

Stanley Morison, in *Fra Luca de Pacioli* (1933), mentioned Tory's "insistence upon the importance of his cabalistic abracadabra." Although Tory vented his scorn on the constructed alphabets of Fanti, Arrighi, Dürer, and Pacioli (accusing the latter of stealing his letters from Leonardo da Vinci) there is nothing particularly distinguished about his own.

The search for the perfect letter form went on into the sixteenth century and writing master manuals included some graphic representation of the ancient capitals with or without compass marks or texts of instruction. The last effort to be reproduced here (Fig. 8) is the R from the manuscript alphabet by Giovanbattista Palatino, the celebrated scribe and author of the writing manual *Libro nuovo, etc.* (1540). This manuscript version of constructed capitals exists in the Berlin Kunstbibliothek (Ms. OS5280) and James Wardrop's date of c. 1550 is approximate; the manuscript and letters seem to have been assembled over a period of time. In Palatino's manuscript R, the

circle and inscribed square is still in evidence although obscured by the extended play of the compass. Palatino's effort, still echoing Vitruvius, brings us to the date of Cresci's debut in Rome. In all of the compass alphabets from Feliciano to Palatino we can observe the same symmetrical treatment of bowls and that identical treatment of serifs which, shrivelled, stiffened, and deprived of calligraphic grace, mark these static *sylloge*.

Giovan Francesco Cresci would have none of this, and instead advocated a return to the study of ancient inscription letters. It is not known how many compass methods Cresci had seen. In his *Essempolare* facsimile, A. S. Osley has indicated that in *L' Idea* (Milan, 1622), a posthumous publication by Cresci's son, Cresci stated that Dürer might have avoided errors of proportion had he seen Roman inscriptions. Of course he had, in visits to Italy before Cresci was born. The discorso in *Essempolare* contains several well-chosen remarks directed to the authors of compass alphabets: "And in drawing every curve of each letter they make more circles than a sphere for the most part contains." Cresci's summation is even better: "I have come to the conclusion that if Euclid, the prince of geometry, returned to this world of ours, he would never find that the curves of the letters could, by means of circles made with compasses, be constructed according to the proportion and style of the ancient letters."

While Cresci disposed of the constructed alphabets in his *Essempolare* essay it is apparent that he recognized that the 1560 alphabet which he presented in argument was not the perfect case for ancient letters. The conclusion must be drawn that in the decade between *Essempolare* and *Il perfetto scrittore* Cresci became more impressed with the fine detail imbedded in classical inscriptions and less impressed with his own contribution. It must not be concluded that the Trajan inscription was the only set of letters that Cresci admired, but he did cite these letters in *Essempolare* and in *Il perfetto scrittore*. In the latter, the Trajan letters were mentioned in the dedication to Cardinal Salviati and in the discourse on capital letters.

The Trajan inscription appears at the base of a column erected in Rome in A.D. 113 to commemorate Emperor Trajan's victories on the frontier of the Danube. (Curiously, the last two of its six lines have never been translated properly.) Most of the larger letters of the in-

scription measure about  $4\frac{1}{2}$  inches vertical. It is interesting to note that the Cresci letters are actually larger than the letters of the Trajan inscription, measuring about  $4\frac{7}{8}$  inches vertical. The only copy to derive from the Renaissance inquiry was that made by Leopardo Antonozzi, and published in *De caratteri* (Rome, 1638). Cresci's praise for them constitutes, therefore, a somewhat lonely stand in his time. More contemporary views have tended to confirm his judgment on the excellence of the Trajan letters.

Modern interest in the Trajan letters chiefly stems from the work of William Lethaby, Edward Johnstone, and Eric Gill in London around the turn of this century. That part of their significant calligraphic movement that concerned inscription forms was based on a plaster copy of the Trajan column deriving from a metal cast ordered by Napoleon III, and acquired by the Victoria and Albert Museum in London in 1864. Neither Napoleon III nor the syndics of the Victoria and Albert Museum seem to have had the slightest interest in the inscription, and it is generally held that the bas-reliefs spiralling the grand monument provided the principal motivation in the chain of events.

Thus the Trajan letters came to be "discovered" again not in Rome but in the Victoria and Albert Museum. Lethaby, the school man, and Johnstone, the scholar and calligrapher, generally deferred to Eric Gill and Percy Smith in matters pertaining to inscription forms, but it was Lethaby, writing an editor's preface to Johnstone's famous book *Writing & Illuminating, & Lettering* (1906), who outlined the methods employed by Roman inscription writers:

The roman characters, which are our letters to-day, although their earlier forms have only come down to us cut in stone, must have been formed by incessant practice with a flat, stiff brush, or some such tool. The disposition of the thicks and thins, and the exact shape of the curves, must have been settled by an instrument used rapidly; I suppose, indeed, that most of the great monumental inscriptions were designed *in situ* by a master writer, and only cut in by the mason, the cutting being merely a fixing, as it were, of the writing, and the cut inscriptions must always have been intended to be completed by painting.

There seemed few who were willing to heed Lethaby's statement. James Mosley has pointed out, in "Trajan Revived" in *Alphabet* (1964), that even before the publication of Johnston's book a new

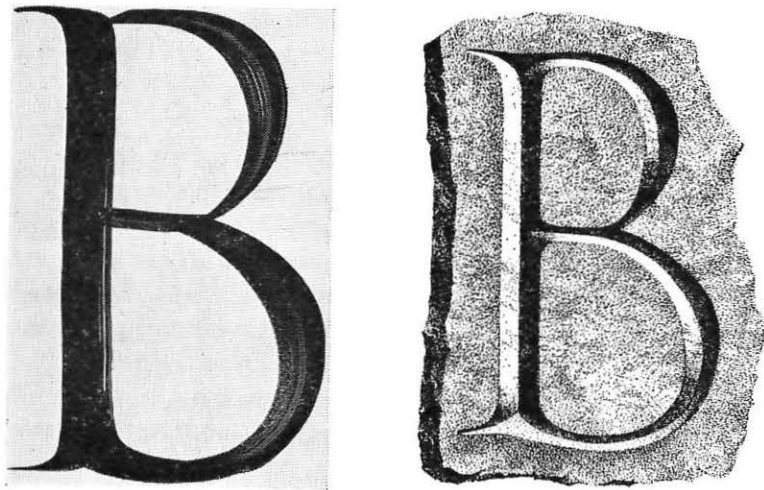
round of compass alphabets had started in being. These inherited the same defects to be seen in efforts from the fifteenth and sixteenth centuries. Even the great Stanley Morison, writing in *Fra Luca de Pacioli*, the splendid Grolier Club edition of 1933, stated: "According to the most authoritative of modern students of epigraphy, Emil Hübner, it is obvious that the more elegant inscriptions were drawn or painted with aid of the rule and compass."

Although Lethaby's statement was correct and Morison's incorrect, proof of the earlier assertion was not forthcoming for lack of original research on the Trajan inscription letters in Rome. The Victoria and Albert cast was a rather gross interpretation of the subtle detail of the original, but between Emil Hübner's study *Exempla Scripturae Epigraphicae Latinae* (1885), and 1935, the only recorded study of the Trajan letters was represented by four crude rubbings obtained by Ernst Detterer, who had earlier studied briefly with Johnstone at Ditchling, and a companion in 1922.

Thus while the Trajan letters became popular in the schools and letter trades of London the inscription in Rome remained undis-

Figure 10. Brush-written B, courtesy Fr. Edward M. Catich, St. Ambrose College, Davenport, Iowa.

Figure 11. Drawing of the large B in the Trajan inscription in Rome, A.D. 113. D. M. Anderson.



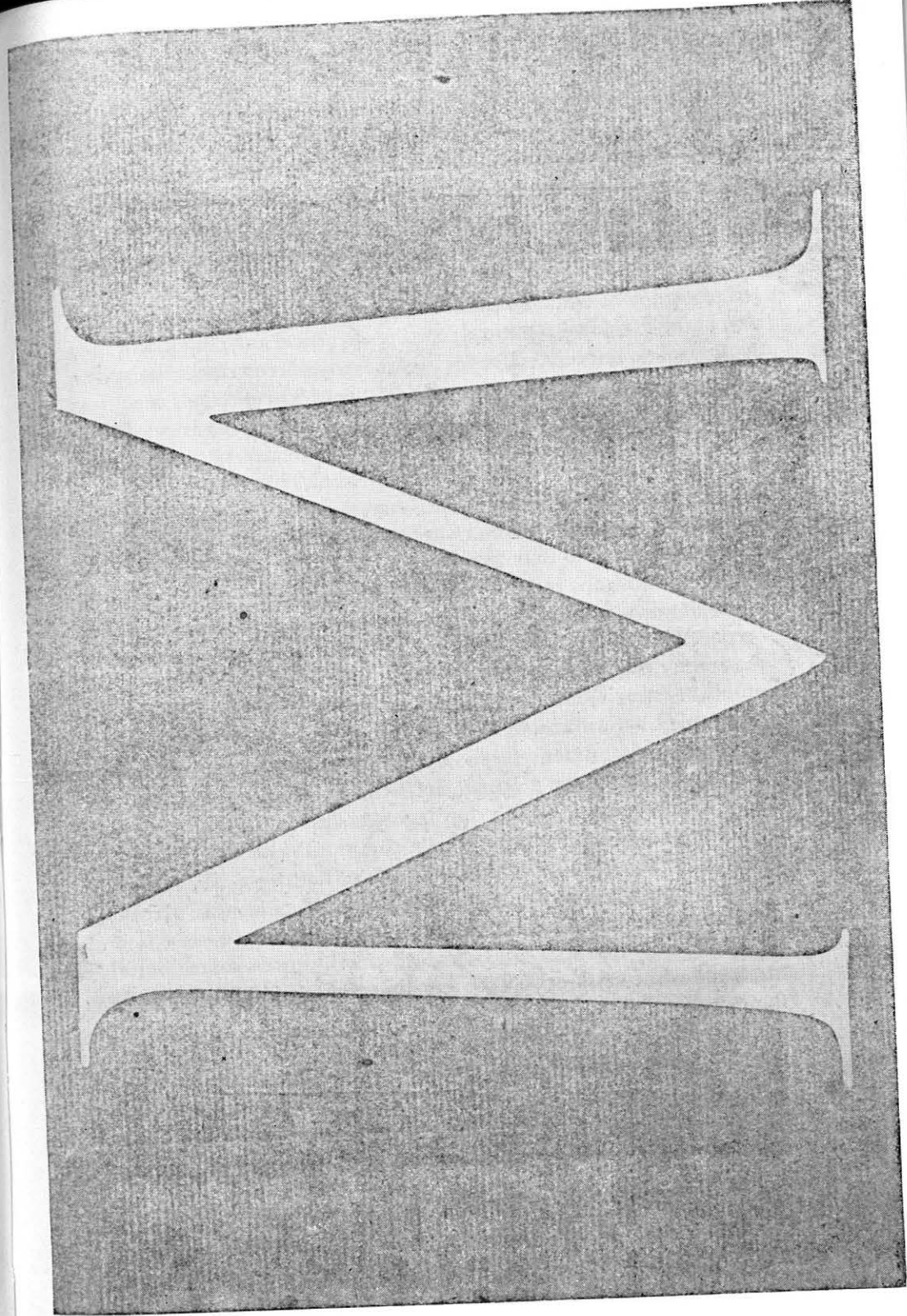
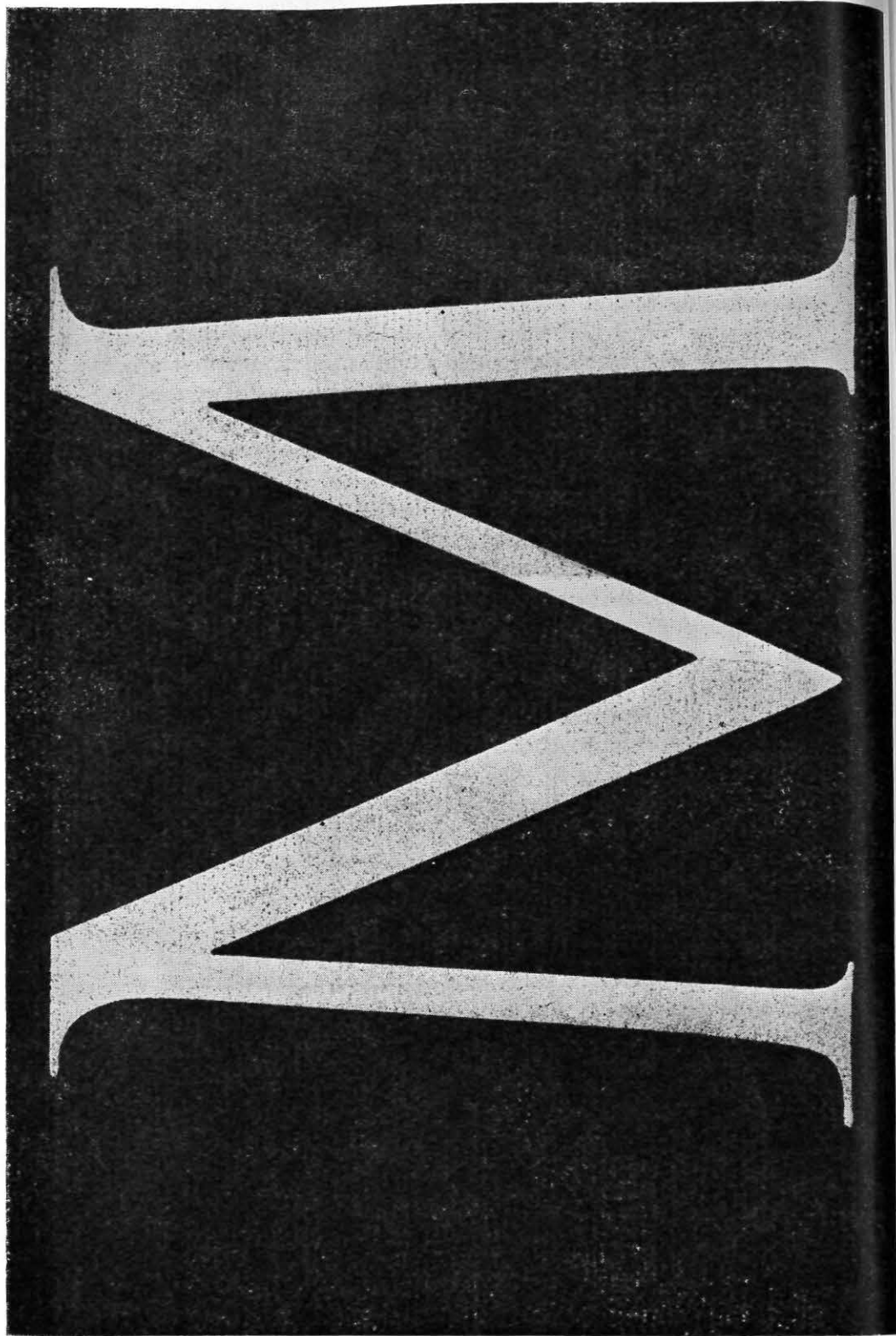
turbed. After Antonozzi's published study of the Trajan letters (1638), the first accurate rendition of them was produced by Fr. Edward M. Catich, who in the late 1930s made tracings from a scaffold, and finally published them in *The Trajan Inscriptions in Rome* (1961). Catich's studies of the *ductus* of Imperial letters are found in his *The Origin of the Serif* (1968).

Even one skilled in the handling of the ancient calligraphic brush will not find the Catich theory easy. It is clear, however, that Lethaby's "master writer" was just that. A key part of the Catich paleography lies in his revelation that some vertical stems of letters are not quite vertical and indeed could not have been ruled or measured, a myth which seems to have been particularly difficult to dislodge not only in the thinking of Vitruvius addicts of an earlier day but in our own.

The Catich interpretation of the brush strokes of Imperial B is seen here with Pacioli's constructed B, and a drawing of the larger B found in the Trajan inscription, this last showing how the Roman carver interpreted the brush-written letter in V-cut incisions (Figs. 9-11). Since our understanding of these matters has only recently been advanced by Catich, it seems even more certain that no one in Renaissance times understood serif structure or the nature of its origin. The 1570 alphabet of Cresci and the fine inscriptions emerging from the *bottegas* of Italy were then in part skilled imitations.

The drift in Cresci's thinking toward a closer allegiance to the classical letter is first traced through his selection of proportion. He gave up the one to eight proportion seen in his 1560 letters for a proportion that is reasonably close to that existing in the Trajan letters. Of course the proportions found in the Trajan letters vary from one to less than nine through one to more than eleven. The proportion of Cresci's 1570 letters seems something like one to ten and a half. Cresci was never rigid on proportion, believing that a number of ratios could suit differing needs, so in the drawing of the *Il perfetto scrittore* letters the move toward the Trajan letters seems deliberate.

Cresci significantly gave up the stiff vertical serifs on the horizontal stroke of T, and changed these in the 1570 letters to forms more like those deriving from calligraphy. Median transversals on the E and F of the 1570 alphabet show some modest change along this line too.



Cresci apparently had intimate knowledge of the stress angle of O and Q. In his 1560 letters he turned this angle slightly counterclockwise and gave reasons for the move. In the 1570 letters O and Q possess angles that are almost as vertical as those found in the Trajan letters.

The anatomy of M and N deserve special mention. In the Cresci M shoulder serifs are present (Fig. 12) while the Trajan letters have none. This latter treatment in classical inscriptions is by no means standard. In inscription M's before the date of Trajan blunt endings are usually seen at the shoulders, a natural meeting of vertical and diagonal brush strokes. But occasionally serifs are seen as in inscription no. 45 in the classic collection by A. and J. Gordon, *Album of Dated Latin Inscriptions* (1958-65). After a rough date of A.D. 200 serifs are more frequently seen on the shoulders of M's but the treatment shows wide variation. It may be said that the form of shoulder serif used by Cresci was the version that won out in the Renaissance, a stabilization of form taking place before Cresci was born. The Trajan form, without serifs, is extinct in the Renaissance.

There are also changes in N through the years. There is little to comment on in the serif initiating the right stem, since this feature was one of the stable parts of classical letter anatomy. Serifs atop the left stem are certainly seen before the date of the Trajan column, most notably perhaps in the Gaius Caesar inscription of A.D. 1 and in the epitaph of C. Iulius Eros, a baker, dating A.D. 11. Again there was a wide variety of treatments for the left shoulder of N, at times full serifs on a bias directed to the diagonal, and at other times a mere suggestion of brush strokes initiating the diagonal. These various serifs of the left shoulder of N are increasingly seen after the Trajan date and may be said to be a stable feature of N before 1500. Both verticals in Cresci's N were thinned down in comparison to these same strokes in the Trajan N's. This too was a standard practice before Cresci's time. This is not to say that the Roman calligraphers were mistaken, but in black and white versions of N the letter benefits from the thinning of these strokes.

Cresci did not want to see his alphabet printed with a black field. It could not be avoided, apparently, and he consented to it only "to satisfy certain friends whose wishes I could not slight," naming no names. Cresci printed the grey-field alphabet for himself. "The requirement of less ink for the field of the capitals makes them stand

out more clearly and in greater relief without their lines being in any way distorted." The first part of this statement seems to constitute evidence that Cresci was aware that the white-on-black alphabet, with its dazzling contrasts, interfered with perception—a view in which he would now receive support. In any case the alphabet of the grey field is preferable and the double printing of the Cresci-Aureri blocks is indeed unique and belongs to Cresci. As Figure 12 shows, Cresci's alphabet of the grey field reveals the texture of brass wires used in the laid moulds employed in the hand-production methods of papermaking of 1570, before the development of paper by wove moulds in England by the middle of the eighteenth century. The slightly engraved quality of Cresci's paper undoubtedly complicated the printing problem. Lighter inking in the grey-field alphabets was satisfactory, but in the black-field inkings the laid mould texture was never quite hidden. So much the better for students of papermaking, even though it was a problem for Cresci and the printers of his *casa*.

It cannot be said that Cresci's sensible views won the day. His emphatic rejection of the compass as a proper tool in creating roman letters was countermanded by his most gifted student, Luca Horfei da Fano, and more banal compass alphabets followed. Rather, Cresci's aesthetic concerns make him a man for our own times. In the discourse in *Il perfetto scrittore* he said, "And let no one marvel if on measuring the capitals (as, for example, the A) he finds that the transversal is thinner than the first (left) stroke, for if it were as thick, it would, being shorter, seem even thicker."

In the commentary accompanying his alphabets Cresci stated that he had hoped to include the rules for drawing the ancient letters he admired. The reason given for the omission was lack of space. The better reason is that Cresci's views prevented his inclusion of such rules. If there is a content of maturity in the treatise of *Il perfetto scrittore* it surely resides in this tribute:

These ancient capitals are so noble in themselves that I think one can truly say that they provided the opportunity for infinite study. In this regard, I should like to cite by way of example the art of painting: Although there are rules and proportions to assure that in painting a beautiful figure its various parts are in harmony, nevertheless, there are still some painters who are so studious in their craft and so favoured by heaven in their art

that despite rules, they will infuse more life, energy and grace into their figures than will another no matter how good a painter he may be. I repeat, then, that the possibility of study in these capitals is so limitless that one should not attempt to lay down precise rules about them or any other matter which someone, as I have shown by my example, could surpass in grace and beauty.

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This article has been adapted with kind permission from Donald M. Anderson's introduction to *A Renaissance Alphabet: Il Perfetto Scrittore, Parte Seconda*, by Giovan Francesco Cresci (Madison, Milwaukee, & London: University of Wisconsin Press, 1971), 11 × 8½ inches, \$12.50. © 1971 by the Regents of the University of Wisconsin. This first facsimile edition of the writing manual handsomely reproduces Cresci's 23 capital letters; as in the original edition, the characters are printed twice—lightly inked, and heavily.

## Why Serifs are Important: the Perception of Small Print

David Owen Robinson, Michael Abbamonte, and Selby H. Evans

The use of serif type styles has continued to dominate printing since the introduction of sans-serif type a century and a half ago. Several theories are considered to account for the continued popularity of the older typefaces. It is suggested that the neurological structure of the human visual system benefits from serifs in the preservation of the main features of letters during neural processing. A computer simulation of visual processing supports this theory, and suggestions are made concerning the function of serifs in letters of different sizes.

Sans-serif typefaces first appeared in the 1830's and were considerably developed earlier in this century. Since there can be no doubt that **H** conveys the same information to literate humans as **H**, it seems strange that the older styles with serifs have been highly resistant to extinction. Because we can perceive each letter without the little additions at the end of their component lines, the continued use of serifs appears at best only decorative and at worst merely superstitious. However, a glance at a selection of journals and books shows that sans-serif type styles do not appear in nearly as many examples as do typefaces with serifs.

Poulton (1964) compared three sans-serif styles of printing with three serif styles in a study of the efficiency of labelling drugs. He found no effective difference between the groups, although Gill Sans was more legible than Univers or Monotype Grotesque 215. Tinker (1963) compared ten different type styles for legibility, including one sans serif—Kabel Light. He found that this type style was read as rapidly as the others but that "readers did not prefer it" and it was placed ninth out of ten for judged legibility. Dowding (1957) suggested that sans serifs are most difficult to read and further commented: "It has been calculated that when the same piece of 'copy' is set in two different types—an old face and a sans serif—that 7½% more time is needed to read the latter."