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Mallarmé: The Transcendence of Language and the Aesthetics of the Book

Gerald L. Bruns

Mallarmé's dream of a book in which all existence is to be contained is predicated upon the isolation of poetic language between the world of things and the universe of meaning. Ordinary speech is structured in order to mediate between these two worlds, but Mallarmé seeks to liberate poetic language from this mediating function, and to establish it as a reality in a world of its own, by substituting the syntax of music for the syntax of speech. Moreover, the syntax of music is to be realized typographically: the words of the poem are to be arranged within the spatial field of the white page in a way that describes a musical structure. Thus the world will find expression in a book—not, however, as a structure of meanings, but in abstract form as a system of pure relations. Mallarmé gestures toward his ideal book in *Un Coup de dés*, in which a simple narrative is organized, not temporally as a sequence of episodes, but spatially and typographically as a concurrence of themes that are distinguished chiefly by different points of type. Thus typography becomes a principle of composition and the book itself a part of the poetic universe.

In this paper I want to concern myself with Stéphane Mallarmé, whose conviction it was that "all earthly existence must ultimately be contained in a book."¹ This conviction builds upon what is doubtless a *fin-de-siècle* commonplace: namely, that the creation of the world is not complete until the world comes to exist within the work of art. This is to say, perhaps, that the world cannot exist in itself but only (to take the poet's point of view) in language: the ideal unity of word and being constitutes the condition of the world's possibility, which only the poet can actualize. This view of poetry suggests the Orpheus myth and the figure of the poet-magus whose song calls the world into existence, and this in turn recalls Mallarmé's claim, in his *Autobiography*, that the book of which he dreams will constitute the "Orphic explanation of the earth" (*M*, p. 15; *Œuvres*, p. 663). But if Orpheus is the poet whose song establishes the world in being, Mallarmé, by contrast, emerges as a poet who seeks to return the

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world to the original void, for his dream of the book rests not upon the unity of word and being but upon their radical separation. For him, the poetic act fulfils itself in a process of annihilation which releases language from its bondage to the world and which establishes the word in the pristine universe of nothingness, in which impossible sphere, Mallarmé was sure, the essence of beauty is to be found.

In a famous passage from "Crise de vers" (1895), Mallarmé wrote: "Why should we perform the miracle by which a natural object is almost made to disappear beneath the magic waving wand of the written word, if not to divorce that object from the direct and the palpable, and so conjure up the pure idea?" (*M.* p. 42; *Œuvres*, p. 368). Such a notion of language recalls Hegel's idea that all representational thinking is essentially an act of negation, in the sense that the object present to the mind in sensation is abolished and replaced by a concept; or, better, it recalls this statement from one of Hegel's Jena Lectures of 1803-4: "The first act by which Adam made himself master of the animals was to impose a name on them, that is to say, he annihilated them in their existence, *qua* existents."² Adam, by his speech, departed from the world of things into a universe of meaning. For the word, in seeking to mediate between man and the world, obliterates the world by its presence, which in contrast to the presence of the world is radiant with intelligibility. But Mallarmé appears to have interested himself in language as a process that annihilates the world, not in order to establish a universe of meaning, but in order to conjure up the presence of beauty. "When I say: 'a flower!' then from that forgetfulness to which my voice consigns all floral form, something different from the usual calyces arises, something all music, essence, and softness: the flower which is absent from all bouquets" (*M.* p. 42; *Œuvres*, p. 368). It is in its absence that the flower displays its beauty—its "music, essence [aroma], and softness." For in its absence the flower participates in the very nature of beauty, which is non-existence.

It was in 1866 that Mallarmé first discovered what value for the poet lay in non-existence. In March of that year he wrote to Henri Cazalis that, while struggling to compose the *Hérodiade*, "I came upon twin abysses which drove me mad. The first was nothingness, which I found without any prior knowledge of Buddhism,³ and I am still too heartsick to bring myself to believe in my own poetry . . . ; [or] to

get back to the work that I had to abandon in the face of this overwhelming vision" (*M.* p. 88; *C.* I, p. 207). Mallarmé's genius, however, was that he was able to translate this "overwhelming vision" into an *aesthetic* experience: "I am travelling," he wrote to Cazalis in July, 1866, "but in unknown lands, and if I have fled from the fierce heat of reality and have taken pleasure in cold imagery, it is because for a month now, I have been on the purest glaciers of esthetics; because, after I had found nothingness, I found beauty" (*M.* pp. 89-90; *C.* I, p. 220). Mallarmé affirms here that beauty, for so long an attribute of being, is in fact an attribute of nothingness: beauty displays itself, that is to say, in the very condition of non-existence.

This, too, is vaguely Hegelian in its gestures. In his *Lectures on Aesthetics* (delivered in 1818), Hegel wrote: "When the idea of beauty seizes itself as absolute or infinite spirit, it also at the same time discovers itself no longer completely realized in the forms of the external world."⁴ Beauty as absolute spirit is absolutely transcendent, a pure idea; it cannot be the predicate of any object. We may connect with this Hegel's statement, in the *Encyclopedia* (1817), that "The absolute negates all things that are not absolute. It is their nothing or negativity. The absolute pervades all finite and definite positions; ruling out the metaphysical value of all positivisms, and thereby affirming its sovereign *freedom*. It is unutterable, unpredictable."⁵ The Absolute emerges only upon the annihilation of all that is not absolute; its possibility rests upon negation, absence, the void. For Mallarmé, the same is true of poetry. It emerges as an art of the beautiful only upon a process of negation; its possibility rests upon the void, nothingness.

So much, indeed, is made clear in a letter that Mallarmé wrote to Villiers de L'Isle-Adam in September, 1867:

Beneath a wave of sensitiveness, I was able to understand the intimate relation of poetry to the universe; and, to make poetry pure, my design was to divorce it from dreams and chance and link it to the idea of that universe. But, unfortunately, since my soul is made for poetic ecstasy alone, I had no mind at my disposal (as you have) to clear the way for this idea. And so you will be terrified to hear that I have discovered the idea of the universe through sensation alone—and that, in order to perpetuate the indelible idea of pure nothingness, I had to fill my brain with the sensation of absolute emptiness (*M.* p. 91; *C.* I, p. 259).

Mallarmé reveals himself here to be less a Hegelian than an eclectic; he proceeds, not by reason, but by experience, and to describe his experience (and by this same token to describe the kind of poetry he would like to write) he appropriates language that is originally Hegel's. Let us mark, however, that the idea of the universe of which Mallarmé speaks is nothingness. Poetry, we are told, aspires to unity with this idea; but how is this aspiration to be realized? The answer is, in a process (or, better, in processes) of negation.

Notice that Mallarmé attains to his idea of the universe by a process of purgation: he empties himself of all that betokens an external world. Mallarmé, however, thought of this process as a kind of death, as though to purge his interior was to destroy himself as an experiencing subject. In May, 1867, he had written to Cazalis: "My thought has thought itself through and reached a pure idea. What the rest of me has suffered during that long agony, is indescribable. But, fortunately, I am quite dead now." What we have here, as Mallarmé makes clear in this same letter, is a theory of impersonality in art enclosed in radical dress: "I am impersonal now, not the Stéphane you once knew, but one of the ways the spiritual universe has found to see itself, unfold itself through what used to be me" (*M*, pp. 93-94; *C*, I, pp. 240-2). The "unfolding" of the idea has (once more) a Hegelian resonance; but, once more, the point is not philosophical but part of an emerging poetics. The contemplation of the void is a process of self-annihilation, which process is of the first importance if the creation of pure poetry is to be possible. For if poetry aspires to the condition of nothingness, and so by its purity to display the idea of the universe; or, again, if it seeks by its purity to participate in the very nature of beauty, the poem must on this account become a closed system—a structure of words closed above all to the poet himself, since it is by his mediation that the world of things and events, ideas and emotions, seeks to make its way into the poem. That expressive movement by which a world of experience becomes objectified in language must be abolished, so that what seems an utterance will finally emerge as an object—a structure that appears to occupy its own world and to display its own laws of development. "If the poem is to be pure," Mallarmé wrote in "Crise de vers," "the poet's voice must be stilled and the initiative taken by the words themselves, which will be set in motion as they meet unequally in collision. And in

an exchange of gleams they will flame out like some glittering swath of fire sweeping over precious stones, and thus replace the audible breathing in lyric poetry of old—replace the poet's own personal and passionate control of verse" (*M*, pp. 40-41; *Œuvres*, p. 336). Creativity seems to be envisioned here as a kind of alchemical process, in which words no longer function as signs in an act of speech but become instead objects with physical and, indeed, magical properties. The poem, that is to say, is no longer a human utterance, for expression has been displaced by the very *substance* of language—language as a reality transcendent in the purity of nothingness, articulating, according to a dynamism peculiarly its own, the pure poem.

And so it was, indeed, Mallarmé's conviction that the language of poetry must be isolated from the language of ordinary speech (*M*, pp. 42-43; *Œuvres*, p. 368). Poetry is not expression; its intelligibility rests upon other, more purely formal grounds. Mallarmé sought to enforce this distinction between the poetic act and the act of speech by aligning poetry with music. "Crise de vers," in fact, appears to take its cue from Richard Wagner's belief that poetry had, in the nineteenth century, reached a critical juncture in its development: it could now evolve either toward science or toward music—toward the exact signification of scientific discourse or toward the pure expressiveness of the symphony.⁶ In "La Musique et les lettres" (1894), Mallarmé makes it clear what the poet's choice must be. "Nature exists," he writes. "She will not be changed, although we may add cities, railroads, or other inventions to our material world." This being so, the poet's only recourse is "to seize relationships and intervals, however few or multiple." We must understand that to create is no longer to evoke substances in pursuit of *la belle nature*; on the contrary,

To create is to conceive an object in its fleeting moment, in its absence.

To do this, we simply compare its facets and dwell lightly, negligently upon their multiplicity. We conjure up [not the object but] a scene of lovely, evanescent, intersecting forms. We recognize the entire and binding arabesque as it leaps dizzily in terror or plays disquieting chords; or, through a sudden digression (by no means disconcerting), we are warned of its likeness unto itself even as it hides. Then, when the melodic line has given way to silence, we seem to hear such themes as are the very logic and substance of our soul (*M*, pp. 48-49; *Œuvres*, pp. 647-8).

We may recall here the passage quoted earlier: "Why should we perform the miracle by which a natural object is almost made to disappear beneath the magic waving wand of the written word . . .?" Not, as in Hegel, to replace it with a meaning, but to "conjure up a scene of lovely, evanescent, intersecting forms." To create is to conceive an object in its absence, that is, to negate it; but whatever ideal content cognition might then ordinarily pursue is superseded, in Mallarmé's view, by "relationships and intervals"—by an "arabesque" whose movement, as Mallarmé goes on to say, marks the "creation of idea—creation perhaps unseen by man, mysterious, like some harmony of perfect purity" (*M*, p. 49; *Œuvres*, p. 648).

The difficulty is that this creation of the pure idea, this evocation of "some harmony of perfect purity," must be accomplished by means of language. The poet, for example, lacks the freedom of the musician. For the musician, freedom lies in the undifferentiated character of his material, which is sound, and which, being undifferentiated, lends itself without bias to formation according to an infinity of possible schemes. The poet's material, however, is not sound but language, which is never undifferentiated but rather is given to the poet as a system already structured for signification. Ordinary speech is governed by structural laws that guide words into those diverse syntactical relationships in which a speaker's meaning finds the condition of its possibility. One can hardly utter a single word without gesturing toward a structural relationship in which that word functions in a significant way. This is to say, in effect, that the poet is, quite as a matter of nature, drawn by his material into a universe of meaning. Mallarmé, however, resists this pull of language toward meaning. What he proposes, with his analogy between poetry and music, is the possibility of isolating the word from the system—of deviating so far from the structural laws of discourse that the word's function as an element in the formation of an utterance will be radically compromised.

Critics have long been intrigued by Mallarmé's experiments with linguistic structures in the four lyrics that make up *Plusieurs sonnets* (1887). We might consider briefly the last of these poems:

Ses purs ongles très haut dédiant leur onyx,
L'Angoisse, ce minuit, soutient, lampadophore,
Maint rêve vespéral brûlé par le Phénix
Que ne recueille pas de cinéraire amphore

Sur les crédences, au salon vide: nul ptyx,
Aboli bibelot d'inanité sonore,
(Car le Maître est allé puiser des pleurs au Styx
Avec ce seul objet dont le Néant s'honore).

Mais proche la croisee au nord vacante, un or
Agonise selon peut-être le décor
Des licornes ruant du feu contre une nixe,

Elle, défunte nue en le miroir, encor
Que, dans l'oubli fermé par le cadre, se fixe
De scintillations sitôt le septuor (*Œuvres*, pp. 68–69)

If we consider the first two stanzas of this poem, we will see that a question immediately arises as to the precise function of the structure, "L'Angoisse . . . soutient . . . maint rêve vespéral." Not only is its emergence held back by the inversion of the first line and the curious word order of the second, but the period of which it forms the (apparently) central syntactical structure is designed in such a way as to allow the insertion of additional but by no means subordinate material (" . . . brûlé par le Phénix/Que ne recueille pas de cinéraire amphore/Sur les crédences, au salon vide"). For its part, "nul ptyx,/ Aboli bibelot d'inanité sonore" is held in place less by syntax than by typography, and so remains structurally independent of the whole—a condition reinforced somewhat by the parenthetical account of the shell's absence and of its peculiar relationship to le Néant.

In "Ses purs ongles," that is to say, the ordinary function of syntax has been appreciably deflected: so far from organizing words into a unified utterance (one capable of bearing the weight of meaning), its activity here seems to have been radically subordinated to another principle of unity. For if the words do not unite syntactically, they are inclined to do so thematically: they suggest, most of them, images of absence—an empty urn, an empty room, an absent shell, a departed master, nothingness, an empty window, a dead nymph reflected in a mirror whose frame encloses forgetfulness. What we are left with, then, is not an utterance but a motif—a musical rather than

truly linguistic structure, one which, as Elizabeth Sewell has shown in her analysis of *Plusieurs sonnets*, moves freely among still more strictly musical relationships. Miss Sewell urges us to consider that "the principle of construction of this poetry is to use the elements [words] not for any intrinsic meaning but to mark positions in a relation system."⁷ This system, according to Miss Sewell, is built up from what she calls the "sound-look" properties of the words, which is to say that it is marked by the interplay of the physical properties of words ("Aboli bibelot d'inanité sonore"; "De scintillations sitôt le septuor") and not by an interplay of significant functions. The words of the poem, that is, do not come together on the basis of any unified movement of meaning, such as one finds in a system of utterances organized according to identifiably syntactic procedures; instead, one discovers somewhat more easily relations formed among separate meanings (as in the diverse images of absence in "Ses purs ongles"), and again on the basis of similar phonetic and even orthographic constructions. Thus the poem, whatever possibilities of meaning it may present to the reader, suggests at the same time (and perhaps with greater force) the presence of a system of pure relations.

We thus begin to see the full import of Mallarmé's theory of impersonality: the annihilation of the speaker is of a piece with Mallarmé's effort to displace the structural laws that govern speech (and which govern as well traditional poetic usage) by structural laws that belong to the world of music. And we begin to see also why Mallarmé attaches such a great premium to the written (or printed) word—the word, not as a functional element in a discourse, but as an object existing in a spatial and visual field. For written language (as it is well known) exists in its own right at several removes from the world of the spoken word. But there is an even more significant point to be observed. In the absence of syntax as a principle of organizing words into a unity, the spatial and visual field of the white page becomes as necessary to poetry as silence is to music. We shall see in a moment the great importance which the white page has for Mallarmé. For now we need only look to Mallarmé's remark, in "Le Mystère dans les lettres" (1895) that "Mystery is said to be music's domain. But the written word also lays claim to it," precisely as the written word is able to induce those "supreme and heart-rending musical moments [which] are born of fleeting arabesques"—

that is, when the word, by its diverse "movements" upon the white page, describes not an utterance but a structure of pure relations. Mallarmé describes such movements as follows:

The sentence may seem to stammer at first, hold back in a knot of incidental bits; then it multiplies, takes on order, and rises up in a noble harmony, wavering all the while in its knowing transpositions.

For those who may be surprised and angered by this broad application of my words, I shall describe the revels of this language.

Words rise up unaided and in ecstasy; many a facet reveals its infinite rarity and is precious to our minds. For our mind is the center of this hesitancy and oscillation; it sees words not in their usual order, but in projection (like the walls of a cave), so long as that mobility which is their principle lives on, that part of speech which is not spoken. Then, quickly, before they die away, they all exchange their brilliancies from afar; or they may touch, and steal a furtive glance (*M*, pp. 32–33; *Œuvres*, pp. 385–6).

We might notice here again that language appears to have been returned to the world of myth, for in "the revels of this language" words take on a life of their own—an independent "mobility" that perhaps asserts once for all their liberation from the syntax of speech. It is by virtue of such mobility that language, as Mallarmé puts it in "La Musique et les lettres," adumbrates "certain orchestral phrasings in which we hear, first, a withdrawal to the shades, swirls and uneasy hesitation, and then suddenly the bursting, leaping, multiple ecstasy of brilliance, like the approaching radiance of a sunrise" (*M*, p. 49; *Œuvres*, p. 648). And by this means language—written or printed language—lays claim to mystery: that is, mystery in its ancient (and, indeed, mythical) sense of revelation. The purity of form displayed by the "hesitancy and oscillation" of language marks it as the proper vehicle for beauty—the idea. (Thus Mallarmé observes, in "La Musique et les lettres," that the "winding and mobile variations of the idea . . . are the prerogative of the written word," *M*, p. 49; *Œuvres*, p. 648.)

Mallarmé proffers here the paradox of still movement—the movement of objects fixed in space. This paradox lies at the heart of his conviction that the present task of modern poets "is to find a way of transposing the symphony to the book: in short, to regain our rightful due. For, undeniably, the true source of music must not be the elemental sound of brasses, strings, or wood-winds, but the intellectual

and written word in all its glory—music of perfect fulness and clarity—the totality of universal relationships” (*M*, p. 42; *Œuvres*, pp. 367–8.) The book here is Mallarmé’s great work—the book in which all earthly existence must one day be contained. The poet’s task, in this case, would be as follows: to transpose objects into words, and to gather those words, not into structures of meaning that will refer us back to the world of things, but into a “totality of universal relationships”—into a musical structure of perhaps unimaginable proportions.

How to accomplish such a task? Mallarmé proceeds by renewing the art of the ancient scribe, whose special vocation grew out of the discovery that the world of objects and events, ideas and emotions, could be reduced to a set of physical particles, only 24 in number, yet capable of being combined in an infinite number of ways. It is well known that many ancient and medieval grammarians, and with them those curious initiates of the Cabalist tradition, invested the letters of the alphabet with mystical significance. In *Mallarmé’s Un Coup de dés*, R. G. Cohn has shown how far Mallarmé went towards re-creating this myth of the alphabet.⁸ The letters are, Mallarmé says in some notes on language and method, “purely hieroglyphic” characters, that is, ciphers whose significance is a matter of shape (*Œuvres*, p. 855). But in these notes and elsewhere he seems finally less concerned with the content of these hieroglyphs than with their function. In “La Musique et les lettres,” for example, he identifies the letters of the alphabet as “our heritage from the ancient books of magic,” and he explains that their value is that “they provide us with a method of notation which spontaneously becomes literature” (*M*, p. 47; *Œuvres*, p. 646)—spontaneously, that is, as if by magic. We seem every inch now in a mythic universe. The point to mark, however, is that in the letters the poet finds something like a principle of composition, precisely because, as Mallarmé says in “Le Livre, instrument spirituel” (1895), they are “gifted with infinity”: “Everything [the totality of earthly existence] is caught up in their endless variations,” which is to say in their capacity for forming an infinite variety of combinations (*M*, p. 26; *Œuvres*, p. 380).

It is in terms of such a method of composition, Mallarmé goes on to say, that “typography becomes a rite” (*M*, p. 26; *Œuvres*, p. 380). For “The book, which is a total expansion of the letter, must find its

mobility in the letter; and in its spaciousness must establish some nameless system of relationships . . .” (*M*, pp. 26–27; *Œuvres*, p. 380). “Nameless” is indeed the appropriate word here. For the world, existing as it does (for the poet) in words, is by the rite of typography to be displayed not as a field of objects nor as a world of experience but as a totality of relations among a set of lexical structures. There is no question here of poetry involving itself in mere representation. In “Crise de vers” Mallarmé remarks that “The inner structures of a book of verse must be inborn”—rather like an innate idea, or perhaps like those several principles deduced by Kant, whereby the mind is understood to organize the undifferentiated material of sensation into structures which, so far from corresponding to an outside world, ground their intelligibility upon their own laws of development. Whereas, however, Kant’s world is phenomenal and significant, Mallarmé’s is at once typographic and musical:

From each theme, itself predestined, a given harmony will be born somewhere in the parts of the total poem and take its proper place within the volume; because, for every sound, there is an echo. Motifs of like pattern will move in balance from point to point. There will be none of the sublime incoherence found in the page-settings of the romantics, none of the artificial unity that used to be based on the square measurements of the book. Everything will be hesitation, disposition of parts, their alternations and relationships—all this contributing to the rhythmic totality, which will be the very silence of the poem, in its blank spaces, as that silence is translated by each structural element in its own way (*M*, p. 41; *Œuvres*, pp. 366–7).

Not substance but form: not the imagining of a totality of objects but the unfolding, typographically, of a manifold of pure activities—“hesitation, disposition of parts, their alternations and relationships”—all contributing to a “rhythmic totality” that, paradoxically, constitutes the very silence of the poem.

“Silence” here is, of course, the silence that attends the written or printed word. But for Mallarmé silence takes on special importance within the context of his aesthetic as a whole. Silence, we may say, signals for Mallarmé the presence of beauty; or, again, in silence the mystery of nothingness—the idea—breaks in upon man. Consequently, in reading, Mallarmé tells us in “Le Mystère dans les lettres,”

We must bend our independent minds, page by page, to the blank space which begins each one; we must forget the title, for it is too resounding. Then, in the tiniest and most scattered stopping-points upon the page, when the lines of chance have been vanquished word by word, the blanks unflinchingly return; before, they were gratuitous; now they are essential; and now at last it is clear that nothing lies beyond; now silence is genuine and just.

It is a virgin space, face to face with the lucidity of our matchless vision, divided of itself, in solitude, into halves of whiteness; and each of these is lawful bride to the other at the wedding of the idea.

Thus the invisible air, or song, beneath the words leads our divining eye from word to music; and thus, like a motif, invisibly it inscribes its fleuron and pendant there (*M*, pp. 33–34; *Œuvres*, p. 387).

The spatial field across which the poet casts his words is gratuitous, irrelevant, in traditional verse; but here it must be understood to be an integral part of the poem itself, in the same way that silence forms an essential part of a musical composition. “Music is born, develops, and realizes itself within silence,” writes Gisèle Brelet: “upon silence it traces out its moving arabesques, which give a form to silence, and yet do not abolish it. A musical work, like all sonority, unfolds between two silences: the silence of its birth and the silence of its completion. In this temporal life where music perpetually is born, dies, and is born again, silence is its faithful companion.”⁹ Just so, for Mallarmé, will written language trace out its “moving arabesques” upon the white page, executing, like so many words in the void, splendid variations of the idea before it is consumed, like music, by the silence of the page. “Thus, in reading, a lonely quiet concert is given for our minds, and they in turn, less noisily, reach its meaning. All our mental faculties will be present in this symphonic exaltation; but, unlike music, they will be rarified, for they partake of thought. Poetry, accompanied by the idea, is perfect music, and cannot be anything else” (*M*, p. 27; *Œuvres*, p. 380).

That is to say, in the afterglow of our encounter with the written word, it is given to us to share the mystery of Mallarmé’s poetry: our minds, “rarefied”—emptied, perhaps, of all but sensations of absolute emptiness—“partake of thought.” We come to share, that is to say, that elemental aesthetic experience upon which Mallarmé grounds his poetry and in particular his dream of the book.

Such a dream, understandably, proved impossible to realize. Mallarmé could only rest content, as he says in “Crise de vers,” that “Certain recent publications have heralded this sort of book,” which is to say that “certain young poets have seen what an overwhelming and harmonious totality a poem must be, and have stammered out the magic concept of the great work” (*M*, p. 41; *Œuvres*, p. 367). Thus, perhaps, does the book emerge as a kind of mythic subject: not the work of one poet but of many, it attains to a cultural dimension, which is to say that it becomes the subject of a cultural activity, and so becomes not a book to be realized once for all in a single creative outburst but instead one to be approximated in successive typographic rituals—a book the totality of which is never fully to be grasped but only to be glimpsed in the luminescence of its several parts.

In this way we may interpret Mallarmé’s *Un Coup de dés* as a part which mysteriously evokes the whole, for in this poem Mallarmé seeks to actualize, not the book itself, but its constitutive principles.* For in *Un Coup de dés* typography replaces syntax as a way of establishing relationships among words—that is, as a way of organizing the material of the poem. Syntactical structures are everywhere adumbrated, but they are radically diffused by the way the words are positioned within the spatial and visual field of the white page. The importance of this displacement of syntax may be explained as follows: syntax, we know, describes a movement in time. In his preface to *Un Coup de dés*, however, Mallarmé makes it clear that he seeks the illusion of movement in space: “we avoid narrative,” he writes, for it is his intention to “space out” our reading of the poem, so that as we move from word to word, or from one group of words to another, we will do so within “a simultaneous vision of the page” (*Œuvres*, p. 455). For the page, not the line, is the unit of Mallarmé’s verse, and within the unit the “fiction”—the ostensible content of the diverse groups of words—appears and disappears “according to the mobility of the writing.” As we have seen, it is principally the release of language from syntax that makes possible the kind of mobility that

* A reproduction of the Gallimard 1914 edition of *Un coup de dés* begins on page 235.

Mallarmé has in mind—the “withdrawals” and “prolongations” that betoken (for him) a musical structure (*Œuvres*, p. 455). Hence a line of verse falls in variable movements from left to right across “halves of whiteness,” its apparently discontinuous but finally carefully modulated mobility controlled by the white space, which, like silence in music, intervenes to give the line a formal (over and against a strictly linguistic) intelligibility.

The differences in points of type in the poem play an integral role in this effort toward the illusion of spatial movement—the illusion, we may say, of a symphony transposed to the book. The title and main theme, “Un coup de dés jamais n’abolira le hasard [A throw of the dice will never abolish chance],” is printed in 48-point type and is dispersed throughout the poem. In his preface Mallarmé identifies this main theme in terms of its structural function: it is “the latent conductor wire” of the poem—latent because concealed within the poem. For the subordinate themes, printed in various smaller points of type according to their structural importance, exist simultaneously with the main theme. They surround and punctuate the main theme, occupying “variable positions” in relation to it, thus to constitute what Mallarmé calls “prismatic subdivisions of the idea” (*Œuvres*, p. 455).

“Idea” here is once more the pure idea which the poem seeks to actualize structurally.¹⁰ The themes adumbrate this idea in the harmony—the “rhythmic totality”—which their mobility suggests. The themes are also accessible to paraphrase, and from them it is possible to deduce the “fiction” which underlies the poem. As in “Ses purs ongles,” which we examined earlier, the significance of the fiction appears to turn on the idea of absence, emptiness—that is, nothingness. In “Ses purs ongles,” the motif of absence gives way at the end to “De scintillations . . . septuor”—to a septet of stars, or constellation. The same structure appears to be at work in *Un Coup de dés*, in which, however, the idea of absence is not presented through images but dramatically, that is, through the representation of “l’acte vide,” an empty action. A “master,” at a critical moment in his life (certain facts of which are interspersed throughout the poem), seeks to test the efficacy of the human will. By a throw of the dice (an act of choice) he will abolish chance and thus establish himself as the master of his own fate. The moment is prepared for, but the theme

which courses through the poem in 14-point type advises us that “rein . . . n’aura eu lieu”—nothing will have taken place. And, indeed, nothing does take place, “excepté . . . peut-être . . . une constellation,” which (as in “Ses purs ongles”) emerges “froide d’oubli et de désuétude”—cold from forgetfulness and disuse.

Like “Ses purs ongles,” *Un Coup de dés* suggests the possibility of meaning. The empty act of the master has perhaps created, as though *ex nihilo*, the purely formal structure implied by the constellation. But such a meaning remains only a possibility, one held in suspension within the musical structure of the poem.¹¹ James Joyce would later begin the composition of *Finnegans Wake* with a simple and straightforward narrative, which he then would displace by creating what can only be described as a purely literary language. Mallarmé anticipated Joyce by some three decades. The narrative in *Un Coup de dés* is finally (and paradoxically) displaced by the very language in which it is realized.

This is to say, perhaps, that the action of the poem is realized not dramatically but musically—or, better, typographically. The action is adumbrated not through a traditional literary structure but through the technology of the written and finally printed word. Mallarmé understood his use of this technology to be revolutionary, in the sense that it marks the creation of a new genre—the poem as book, in whose physical dimensions the poet lays out his “matchless vision” and by this means transforms the book into an authentic medium. Through typography, in other words, the world of print comes to occupy that magical universe in which poetry finds the mystery of its being.

1. Trans. Bradford Cook, *Mallarmé: Selected Prose Poems, Essays, and Letters* (Baltimore, 1956), p. 24; and *Œuvres complètes* (Pléiade Edition), ed. Henri Mondor and G. Jean-Aubrey (Paris, 1945), p. 378. Subsequent references to Mallarmé’s works will be to both the English translation and the French text, cited respectively as *M* and *Œuvres* in parentheses following quotation. References to the letters will be to Stéphane Mallarmé, *Correspondance*, I (Paris, 1959), ed. Henri Mondor; II (Paris, 1965), ed. Henri Mondor and Lloyd James Austin, and will be cited as *C* in parentheses following quotation.

2. Quoted by Maurice Blanchot, “La Littérature et le droit à la mort,” in *La Part du feu* (Paris, 1949), p. 325.

3. Cazalis was the author of a book on Buddhism entitled, *Le Livre du néant* (1872).
4. *The Philosophy of Hegel*, ed. Carl J. Friedrich (New York, 1953), p. 335.
5. Trans. Gustave Emil Mueller (New York, 1959), p. 103.
6. *Richard Wagner's Prose Works*, trans. Wm. Ashton Ellis, (London, 1893), III, p. 319.
7. *The Structure of Poetry* (London, 1951), p. 152.
8. (New Haven, 1950), pp. 35–38, 118–122.
9. "Music and Silence," in *Reflections on Art*, ed. Susanne K. Langer (Baltimore, 1958), p. 103; first published in *La Revue musicale*, XXII (1946), 169–181.
10. For a brilliant and exhaustive reading of *Un Coup de dés*, cf. Bernard Weinberg, *The Limits of Symbolism* (Chicago, 1966), pp. 236–321.
11. In a letter to André Gide (April, 1898), Mallarmé suggests that it was the structure of the action that chiefly concerned him, and that the typography of the poem imitates this structure. Bradford translates a portion of this letter, *M*, p. 105. Gide quotes the letter in "Verlaine et Mallarmé," *Œuvres complètes d'André Gide*, VII (Paris, 1932), p. 428.

UN COUP DE DÉS

JAMAIS

QUAND BIEN MÊME LANCÉ DANS DES CIRCONSTANCES
ÉTERNELLES

DU FOND D'UN NAUFRAGE

On the following pages: Mallarmé, Stéphane. *Un coup de des jamais n'abolira le hasard*. Paris: Gallimard, Editions de la Nouvelle revue française, 1914.

SOIT
que
l'Abîme
blanchi
étale
forieux
sous une inclination
plane désespérément
d'aile
la sicone
par

avance retombée d'un mal à dévorer le vol
et couvrant les jillissements
coupant au ras les bonds

très à l'intérieur résume
l'ombre enfouie dans la profondeur par cette voile alternative
jusqu'à adapter
à l'envergure
sa béante profondeur en tant que la coque
d'un bâtiment
penché de l'un ou l'autre bord

ancestralement à n'ouvrir pas la main
crispée
par delà l'inutile tête
legé en la disparition
à quelqu'un
ambigu
l'ultérieur démon immémorial
ayant
de contrées nulles
induit
le vieillard vers cette conjonction suprême avec la probabilité
celui
son ombre putride
caressée et polie et rendue et lavée
assouplie par la vague et soustraite
aux durs os perdus entre les ais
né
d'un ébat
la mer par l'atout tentant ou l'atout contre la mer
une chance cieuse
dont
le voile d'illusion rejailli leur hantise
ainsi que le fantôme d'un geste
chancellera
s'affilera
folie

Fiançailles

N'ABOLIRA

LE MAÎTRE

urgé
infrant
de cette conflagration
que se
comme on menace
l'unique Nombre qui ne peut pas
bêta
cadavre par le bras
plutôt
que de jouer
en manisque cheau
la partie
au nom des flots
un
naufage cela

hors d'anciens calculs
où la manœuvre avec l'âge oubliée
jadis il empoignait la barre
à ses pieds
de l'horizon unanime
prépare
s'agite et mêle
au poing qui l'étreindrait
un destin et les vents
être un autre
Espoir
pour le jeter
dans la tempête
en reployer la division et passer fier
écarté du secret qu'il détient
cavahit le chef
coule en barbe soumise
direct de l'homme
sans oef
n'importe
où vaine

COMME SI

Une insinuation
au silence
dans quelque proche
sautige

simple
entraîne avec ironie
ou
le mystère
précipite
hurle
tourbillon d'hilarité et d'horreur
navire du gouffre
sans le jancher
ni faire
et en herce le surgo indicé

COMME SI

plume solitaire éperdue

souff

que la rencontre ou l'effleur une roque de minuit
et immobilise
au valeurs chiffonnées par un esclaffement sombre

cette blancheur rigide

dérivante
en opposition au ciel
trop
pour ne pas marquer
exagérément
quiconque

prince amer de l'écutil

s'en coiffe comme de l'hérouque
irrésistible mais contenu
par sa petite raison virile
en foudre

C'ÉTAIT
sur mille

CE SERAIT

pour
sur
désespoir et même
indifférence mais sans

LE NOMBRE

EXISTÁT-IL
autrement qu'allucination épure d'égérie

COMMENÇAT-IL ET CESSAT-IL
soudain que tel et tel quand voyez
c'est
par quelque profusion répandue en moult
SE CHIFFRAT-IL

Evidence de la somme pour peu qu'on
ILLUMINAT-IL

LE HASARD

Châti
la plume
rythmique suspendu du sinistre
s'ensevelir
aux écumes originelles
nagades d'ou surraute son délire jusqu'à une cime
flétris
par la neutralité identique du gouffre

stucueux
expatière et pubère

muet

rire

que

SI

La lucide et seigneuriale aigrette
au front incinible
scintille
puls ombraque
une nature mignonne ténébreuse
en sa torsion de sirène
par d'impatentes squames ultimes

de verrige

debout

le temps
de souffler
bisfurqués

un roc

faux manoir
tout de suite
évaporé en brumes

qui impose
une borne à l'infini

RIEN

de la mémorable crise
ou se fût
l'évènement

accompli en vue de tout résultat nul
humain

N'AURA EU LIEU
une élévation ordinaire vers l'absence

QUE LE LIEU
inférieur clapotis quelconque comme pour disperser l'acte vide
abruptement qui sinon
par son mensonge
est fondé
la perdition

dans ces parages
du vague
en quoi toute réalité se dissout

EXCEPTÉ
à l'altitude
PEUT-ÊTRE
aussi loin qu'un endroit

fusionne avec au delà
hors l'intérêt
quant à lui signalé
en général
selon telle obliquité par telle déclivité
de feux

vers
se doit être
le Sépentrion aussi Nord

UNE CONSTELLATION

froide d'oubli et de dévétude
pas tant
qu'elle n'énumère
sur quelque surface vacante et supérieure
le heurt successif
idéalement
d'un compte total en formation

veillant

doutant

roulant

brillant et méditant

avant de s'arrêter
à quelque point dernier qui le sacre

Toute Pensée émet un Coup de Dés.

O or 0?

Dirk Wendt

There is a need for a universal and aesthetic solution to the current problem of distinguishing between the capital letter oh and the numeral zero on electronic data processing equipment. Practices leading to the present lack of understanding and differentiation are discussed and illustrated. A new proposal for distinguishing between the oh and the zero is advanced.

The printing and typing output devices of many data processing machines do not distinguish between the capital letter oh and the numeral zero. Internally, however, in the electronic cores of these machines the symbols are coded and handled quite differently. This is completely all right as long as there is no doubt about their identity. The problem arises as soon as you are debugging a program, and you cannot see from the computer output whether there is a letter oh or a numeral zero in a certain position. Mixing up these two symbols can be quite fatal to the computer program. Unfortunately, such errors happen frequently, especially when less skilled typists are typing the program—and in most cases the programmers are not very experienced typists since typing is not part of their education. I remember a programmer team which was working on the terminal of a time sharing computer and became quite desperate about the indiscriminability of oh and zero. Finally one of the team took a file and scratched the face of the oh so that it could be recognized on all further outputs (see Fig. 1 for an illustration).

This procedure solved the problem in that individual case—but there should be a general and more aesthetic solution. Some Teletypes have an additional stroke diagonally through the numeral zero: Ø (see Table I, 4th pair). This, again, solves the problem technically, but there are some objections to this solution. Frequently computer outputs are used directly (i.e., photographically reproduced) in

LOG

TIME USED
 CPU: 00.01 MIN
 CON: 00.06 HRS

Figure 1. Teletype output with originally identical oh and zero; the operators scratched the oh (see in "LOG" and "CON") to make a distinction possible.

TABLE 1: Numbers and Percentages of Subjects Considering the Symbol in the Top Line as Letter O.

Pair No.	1		2		3		4		5	
	O	0	0	0	O	o	O	Ø	O	⊙
16 staff members of the computing center	15 94%	1 6%	5 31%	11 69%	14 87%	2 13%	3 19%	13 81%	8 50%	8 50%
22 other computer users	21 96%	1 4%	11 50%	11 50%	15 68%	7 32%	17 77%	5 23%	15 68%	7 32%
68 students in a programming course	57 84%	11 16%	46 63%	22 37%	38 56%	30 44%	54 79%	14 21%	52 76%	16 24%
106 subjects (total)	93 88%	13 12%	62 59%	44 41%	67 63%	39 37%	74 70%	32 30%	75 71%	31 29%

tables, etc., for publications. And a table with zeros like this, Ø, would look rather strange in an article otherwise composed of normal typefaces (including numerals). Another objection to Ø as zero is that it equals a Danish letter, and the symbol technicians frequently use for "diameter," and the symbol mathematicians use for the empty set. To complete the confusion about this symbol, some earlier IBM manuals¹ used Ø for the letter oh, more recent ones use it for zero. SHARE, the IBM users organization, and IBM official practice now use Ø for zero, and O for oh uniformly.^{2, 3} Vartabedian,⁴ in an experimental investigation, found the virgule through the O to be an unsatisfactory means of differentiation between the two characters.

There are more solutions to the problem offered by the industry. The computer output "Anelex"⁵ uses very small circles for zero, and a regular O for the letter oh. But the little zero circle was so small that it was almost indistinguishable from the decimal point, and tables printed with this zero looked very strange and could not be used for direct photographic reproduction in publications. Therefore, a staff working on a computer equipped with this output device decided to change the wiring such that they avoided the small zero circle completely, and both the oh and the zero were printed by the same symbol O. (In any case, even scratching it would not be of any help!)

A German banking institute⁶ prints its customers' statements by a device which produces a zero with a small concentric circle within the regular O, as shown in pair 5 of Table I. This, however, will look more like oh rather than zero to those readers who are in the habit of writing their handwritten ohs with center dots to make them distinct from their zeros. Other people make small horizontal dashes through their zeros, like this: . Neither of these principles seems adoptable for computer outputs because they deviate too far from usual typography (like Ø). Additional trouble would rise if people center-dotting their ohs tried to communicate with people dashing their zeros; the problem would shift from guessing whether a circle stands for oh or zero to discriminating whether there is a dash or a dot in the circle.

In the standard alphabets for writing instructions in the schools of some countries the oh has a small hook in its top which is not the case with the zero.⁷

```

LOG
TIME USED
CPU: 00.01 MIN
CON: 00.06 HRS

```

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In the standard alphabets for writing instructions in the schools of some countries the oh has a small hook in its top which is not the case with the zero.⁷

Vartabedian⁸ recommends adoption of this principle for computer outputs, too. Tait, in Bemer's article,⁹ proposed a similar solution for the matrix-type keypunch font.

German writing standards, as issued by the Arbeitsgemeinschaft Schreiberziehung,¹⁰ and obligatory for writing instructions in all public schools in West Germany, do not provide a distinction between zero and oh by means of the loop; both characters have small hooks in their tops. But all numerals are somewhat smaller (in height) than the capital letters, about halfway between the height of the capitals and the x-height. This tiny difference barely shows up in fluent writing, but its principle could be used for computer outputs, too: make the numerals somewhat lower, and/or the letters somewhat higher, just to give them a small but notable difference in height. This would not only conform to regular printing practice¹¹ but also make it easier to find a bug in a program or in a set of data. The somewhat larger (mistyped) letter oh would easily show up in a sequence of numerals, and so would the somewhat smaller mistyped zero in a string of letters (Fig. 2).

In many fonts of printing typefaces, and in lettering stencils, the zero is designed slightly narrower than the oh. This principle seems highly compatible with the previously mentioned distinction by designing numerals somewhat lower than capitals. It actually has been adopted by some IBM printouts which have a squared O for the letter oh, and an ellipse for zero¹² (Fig. 3).

Unfortunately, the recently designed typeface OCR-A uses a squared zero, and an ellipsoid diamond shaped character as letter oh.¹³ These are but just individual practices applied by some typeface designers. To my best knowledge, there do not exist any official guidelines on how to make the distinction.

For printing standards, the Fachnormenausschuß Graphisches Gewerbe (NAGRA), a subdivision of the German board for industrial standards (DIN), has issued a set of requirements which should be met in composing mathematical formulae.¹⁴ They recommend choosing typefaces which make sure that the lower-case l, the numeral 1, and the capitals I and J are easily and correctly understood, and that Greek and Roman letters, and capital and lower-case letters cannot get mixed up, especially as subscripts, but very little is said on how to distinguish between oh and zero. They only require that

26.13,28.40,27.04

10 FoRMAT(F9.3,F6.2,14)

Figure 2. A string of numerals with an erroneously typed oh in it which easily shows up by its size (in 28.40), and a string of letters where a mistyped zero (instead of an oh in "FORMAT") is easily found out. Proportion of sizes of letters : numerals is 7 : 6.

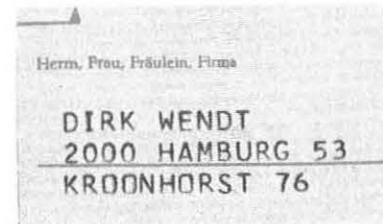


Figure 3. Output with oval zeros and squared ohs as in use on some IBM printing devices, and on the telephone statements by the Deutsche Bundespost (our example).

small grades as used for subscripts should print so clearly that lowercase o, capital O, zero, and ° (degree) can be distinguished—but without saying how the distinction should be made. In short, they merely give suggestions for the choice of a font but not for its design. For the manuscript, however, they recommend drawing zero narrower than oh.¹⁵ This is consistent with the use in many type fonts, and with standard lettering stencils. (The first pair of symbols in Table I is drawn by such a stencil; see also the heading of this article.)

Obviously, there is some practical need to distinguish clearly between the oh and zero—not only for computer programmers. The problem arises with license plates and telephone numbers, too, which start with three letters in some cities, and with two letters in others. Something should be done to introduce a generally accepted, and internationally understood distinction between these two symbols. If introduced officially, such a distinction should be the same in all nations, and it should be such that it can be understood by all readers, with as little unlearning as possible, to avoid unnecessary controversy and misunderstanding.

A couple of possible ways to make this distinction as suggested by different makers of computer output equipment have been mentioned. A very simple experiment was performed to test how these suggestions meet the above requirement of being unambiguously understood by readers. Staff members of the computing center at the University of Hamburg, students in a programming course, and other scientists frequently using the computing center of the University of Hamburg answered a questionnaire in which the problem was outlined, and five different possibilities of distinctions between oh and zero were displayed, as shown in Table I. The subjects' task was to indicate in each pair which of the two symbols they would, intuitively, understand as zero, and which as oh, without having further information than that in each pair one symbol had to be oh and the other, zero.

Table I shows the results of this investigation. In the total group, the distinction by adding a small hook to one of the symbols is most ambiguous, whereas making the zero somewhat narrower (as usual in many printing fonts) is most clearly understood. The symbol Ø is understood as oh by most of the computing center staff members, but as zero by most of the other subjects. This is clear since they are the

readers of a Fortran manual which uses Ø for oh. The same holds for the second pair of symbols where the staff members give different results from the other groups, too; this is due to the fact that there was in the computing center a typewriter which had a hook in the top of the zero rather than in the oh as in the American handwriting standard.

Since these results were obtained only with subjects around one computing center, they cannot be considered representative for mankind, and everybody who has such an opportunity should be encouraged to repeat the study in his own environment. At any rate, it seems as if the distinction by making the zero somewhat narrower than the oh, as actually made in many typefaces, is most clearly understood by the readers. An even better suggestion would be to make all numerals somewhat smaller, and/or all letters somewhat larger since this would make a typing mixup between the two characters still more obvious. However, this means of distinction was not tested in our experiment since we displayed only single characters. This could be changed in a further experiment which might display various strings of numerals and letters where it would be the task of the subject to find out which O is the oh and which is the zero.

At any rate, the designers of typefaces, especially for computer output devices, should be encouraged to emphasize these means of distinction rather than inventing new ones which will raise more confusion. Some (maybe rather desperate) computer programmers meanwhile solved the problem quite another way: they started writing compilers and programs which do not need a distinction between zero and oh.¹⁶

1. Daniel McCracken, *A Guide to FORTRAN Programming* (New York: Wiley, 1961).
2. Bemser, R. W., "Towards Standards for Handwritten Zero and Oh," *Communications of the ACM*, X (August 1967), 513–518.
3. Dr. William B. Kehl, Campus Computing Network, UCLA, Los Angeles; Private communication.
4. Vartabedian, A. G. "A Proposed Fontstyle for the Graphic Representation of the Oh and Zero," *Journal of Typographic Research*, III (July, 1969), 249–258.

5. Telefunken-Schnelldrucker with printing part made by the Anelex Corporation, in use in the Computing Center at the University of Hamburg.
6. Dr. Feldmann, Rechenzentrum der Universität Hamburg; private communication.
7. M. Reed and E. Osswald, *My First Golden Dictionary* (New York: Golden Press, 1963).
8. Vartabedian, *op. cit.*
9. Bemmer, *op. cit.*
10. Mr. Lämmel, Arbeitsgemeinschaft Schreiberziehung, Hannover; private communication.
11. Kehl, *op. cit.*
12. Bemmer and Kehl, *op. cit.*
13. Herbert Spencer, *The Visible Word* (London: Royal College of Art, 1969).
14. Normblatt 1338 DIN, Buchstaben, Ziffern und Zeichen im Formelsatz (Berlin: Beuth-Vertrieb, 1968).
15. *Ibid.*
16. Bemmer, *op. cit.*

A Proposed Fontstyle for the Graphic Representation of the Oh and Zero

Allen G. Vartabedian

A new fontstyle is proposed for the machine rendering of the graphic representation of the letter oh and the number zero. It prescribes placing a loop on the oh and drawing the zero as an oval. The new convention is intended for use in communication environments where the discriminability of graphic symbols is critical. These environments include use of devices such as teleprinters, computer line printers, keypunch machines, and cathode ray tube displays. The proposed new fontstyle does not draw upon previous conventions for distinguishing between these symbols and consequently avoids a current conflict in slashing either the oh or zero. A design criterion is also presented for distinguishing between the numbers and letters of a given font.

I. Introduction

In recent years the question of whether to slash the oh (alpha O) or the zero (numeric 0) in the machine rendering of the graphical representation of these symbols has been bandied about without resolution.¹ Proposed standards have oscillated between slashing the oh and slashing the zero with little agreement between the proponents of either of the two camps.

Historically the data communication community has adopted the convention of slashing the zero.² They reasoned that in teletypewriter environments the frequency of occurrence of zero is less than oh, and consequently the embellished character would appear least often with this convention. Moreover, numerics generally occur in a strictly defined format, and therefore an operator would be cued to expect the novel character and would not find it annoying.

More recently, the computer community has generally adopted the convention of slashing the oh based on the frequency of occurrence argument.³ As long as these two communities remained independent of each other there was little problem with the existence of these two conflicting conventions. However, when

programmers, analysts, teletypewriter operators, and code clerks began transferring between the activities in the communications and computing environments, the need for a single standard became apparent.

In environments where graphic symbol recognition is critical, characters should be highly legible. A critical environment is one in which the cost or likelihood of an error is great. Computer and communication operations generally provide such a critical environment.

In this paper, legibility is understood to mean that attribute of a graphic symbol which allows it to be identified to the exclusion of all other symbols in a defined set. In addition, speed of identification is a factor contributing to legibility.

Using this definition for legibility, it is seen that each symbol of a defined graphic set must be unique in fontstyle. Furthermore, the fontstyle should admit to rapid identification or identification under conditions where the display medium is severely degraded (e.g., symbols which subtend a small visual angle, symbols of low brightness or brightness contrast, short exposure time, or degraded by "noise"). Symbols drawn with a matrix of light points can be considered to be of reduced resolution.

II. Results of First Legibility Experiment

An experiment testing the legibility of a set of upper-case, lower-case, and numeric symbols was conducted to determine the pattern of intersymbol confusions. Eight subjects with 20/20 visual acuity uncorrected in the near and far field were shown symbols for a period of approximately one millisecond. Symbol height subtended an arc of 20 minutes at the subject's eye. Symbols were shown using a 7×9 dot matrix on a cathode ray tube at three brightness levels. In this test the zero was defined as a round symbol with a virgule through it and the oh was defined as an oval symbol as in Figure 1. The confusion matrix for the oh and zero for each brightness level is presented in Table I.

Looking at the oh and zero alone, the predominant confusion pattern was that, in total, the zero was called an oh 11 times whereas the oh was called a zero only once. These differences in error rates are significant according to a Poisson test at the 1% level.⁴

TABLE I. Confusion Matrix for Oh and Zero for First Legibility Experiment (8 Subjects)

Symbol Shown	Response		Brightness (Ft-Lamberts)
	Zero	Oh	
Zero		3	5
Oh	1		
Zero		5	8
Oh	0		
Zero		3	11
Oh	0		
SUMMARY			
Zero		11	
Oh	1		

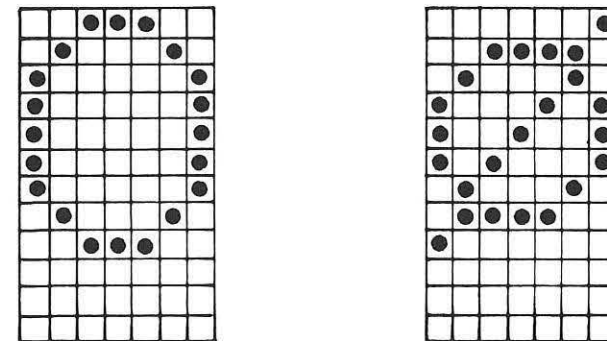


Figure 1. Oh (left) and zero used in first legibility experiment.

The above pattern of confusion of the oh and zero is seen to be one in which the given symbol is mistaken for another symbol with a simpler outline more often than the reverse. Deuth⁵ found this same result. Consequently, the simpler symbol should be the one which is more likely to be confused. Conceivably, the oh is less likely to be confused because of visual cues provided by the constructive redundancy of letters in written languages. This suggests that the simpler symbol should be the zero.

III. Criteria

The predominant criterion in the past for the fontstyle for the oh and zero has been to embellish that character which has the lowest frequency of occurrence in the given communication environment. When such a frequency cannot be defined, this definition is unusable. Furthermore, even if such a frequency could be defined, it would not necessarily lead to a valid criterion for distinguishing between oh and zero. Using the concept of "figural goodness" (a measure of the enhancement of the perceptual process of decoding visual stimuli) from Gestalt perception theory, the apprehension of meaning from a given symbol can be facilitated by the shape of the symbol.⁶ Consequently, other criteria for the fontstyle of alphanumeric symbols suggest themselves.

Fontstylists have created a vast number of fonts for variety and esthetics in typographical composition. These fonts in many cases are greatly differentiated from each other by means of basic shapes, added stylistic elements, or the use of ornamentation such as serifs. The great variety in fontstyles has for the most part manifested itself in the alphabetic symbols alone. The numeric symbols have been designed within very narrow limits of graphical freedom. Table II indicates how narrow these limits are—tracing the numerics from the third century B.C. to the fifteenth century.

As a result of the great variety of fontstyles, readers are able to contend quite effectively with the many different graphical representations of alphabetic symbols, even when such graphics are entirely novel. The fact that written languages are highly redundant makes this task quite easy. The visual cues provided by redundancy reduce the stringency of the need for the unique identifiability of symbols since the meaning can be guessed (visually synthesized) from context.

TABLE II. *Hindu-Arabic Numerals*

	1	2	3	4	5	6	7	8	9	0
Nānā Ghat	—	=	≡	¥		φ	7		2	
India 3rd century B.C.										
Devanāgarī	१	२	३	४	५		७	८	९	०
India 10th century										
Ghobār	1	2	3	4	5	6	7	8	9	0
Spain c.976										
Italy c.1400	1	2	3	4	5	6	7	8	9	0

No similar cues are available in the use of numerics where readers encounter graphic shapes that are mapped within much narrower confines.

A proposed criterion for the discriminability between the oh and zero then would be one that states that numerics should be relatively unembellished conforming as nearly as possible to traditional forms based on their Hindu-Arabic antecedents, while any distinguishing marks should be placed on the alphabetic.

This criterion simply states that if any symbol is to be marked, then it should be an alphabetic rather than a numeric. There are situations where such marking is unnecessary, either because discriminability is not critical or meaning can be derived from format or context. Here shape can be used as the distinguishing characteristic between the oh and zero. In fact, from the standpoint of good typographic design it is desirable to shape the zero oval (as traditionally drawn) and the oh round [see preceding article by Dirk Wendt].⁷ In situations where the symbol is clearly defined by format or context these characteristics are fully adequate. However, where such format and contextual cues are unavailable and the need for discriminability is critical, graphic markings on the oh are necessary.

IV. Proposal

As indicated above, the proposed convention should be one which prescribes marking the oh and leaving the zero unembellished. The presently used convention of placing a virgule through the oh is consistent with this criterion. However, it is in direct conflict with another existing convention of slashing the zero.

The proposed convention prescribes a loop at the top of the oh and an oval form for the zero. Figure 2 presents the proposed oh paired with its corresponding zero. It is seen that this pair of symbols results from the above criterion and that both symbols have high values of "figural goodness." Those qualities contributing to "figural goodness" include continuity, simplicity, unity, and the lack of apparently superposed forms.⁸ These symbols satisfy the requirement for the unique discriminability between the oh and zero.

This fontstyle has the following desirable properties:

1. It avoids the conflict of using a virgule on either the oh or zero.
2. The appearance of the oh is not fundamentally altered from that of a O as in the case of Ø.

TABLE III. Confusion Matrix for Oh and Zero for Second Legibility Experiment (12 Subjects)

Symbol Shown	Response		Brightness (Ft-Lamberts)
	Zero	Oh	
Zero		3	5
Oh	0		
Zero		0	8
Oh	0		
Zero		2	11
Oh	3		
SUMMARY			
Zero		5	
Oh	3		

3. This is a familiar representation of script oh. It is, in fact, similar to handwriting standards in several countries.
4. It does not violate the appearance of the numerics which are part of an international graphic set.
5. It does not violate certain European, Latin based, alphabets in which Ø and O are valid alphabetic symbols.

Figures 3, 4, and 5 show that this convention for the oh and zero can be implemented under conditions of reduced resolution on a cathode ray tube. Figure 3 presents this pair with a 7 × 9 matrix of light points, Figure 4 with a 5 × 7 matrix, Figure 5 with strokes, and Figure 6 on a teletypewriter.

V. Results of Second Legibility Experiment

A second legibility experiment was conducted to test the proposed oh and zero as presented in Figure 7. The design of this experiment was identical to the first experiment except that twelve subjects were used.

The confusion matrix (Table III) shows that, in total, the zero was called oh five times and the oh was called zero three times. Using a Poisson test,⁹ it was found that these error rates are not significantly

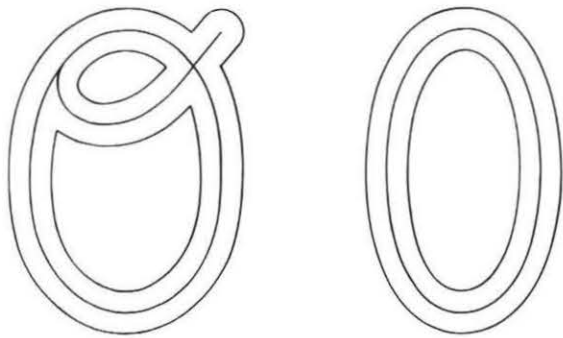


Figure 2. Proposed oh (left) and zero.

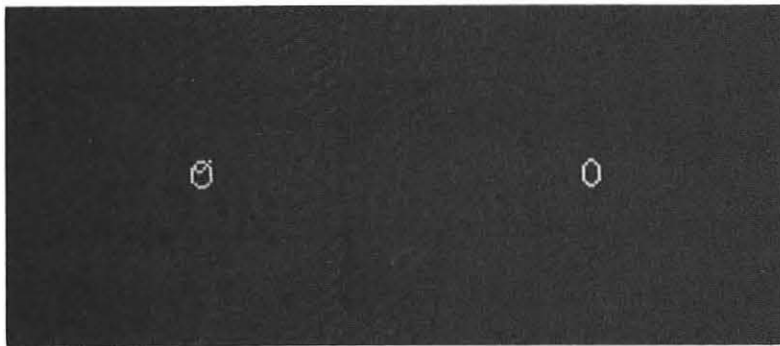


Figure 3. Proposed oh and zero in a 7×9 matrix displayed on a cathode ray tube.

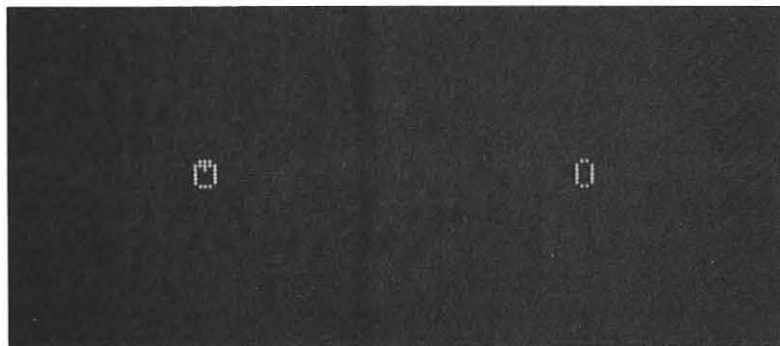


Figure 4. Proposed oh and zero in a 5×7 matrix displayed on a cathode ray tube.
256

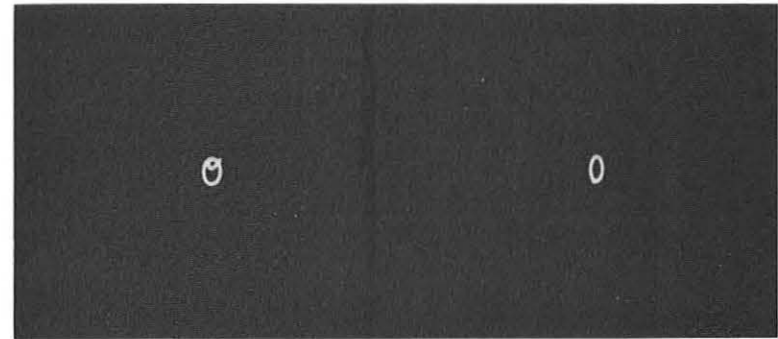


Figure 5. Proposed oh and zero drawn with strokes on a cathode ray tube.



Figure 6. Proposed oh and zero produced with a teletypewriter.

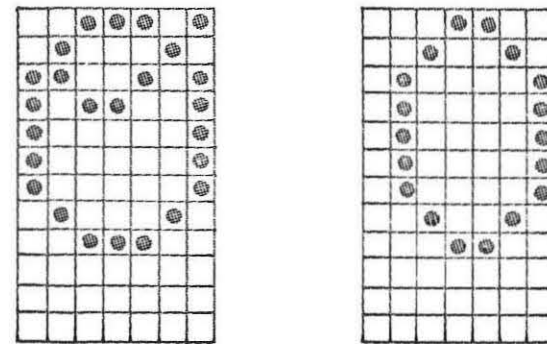


Figure 7. Oh and zero used in second legibility experiment.
257

different. Moreover, the combined error rate for the proposed oh and zero is less than half that for the prior oh and zero. We can conclude from these results that a more legible pair of symbols has been achieved with the proposed oh and zero.

VI. *Recommendation*

It is recommended that the convention for distinguishing between the oh and zero in environments where the legibility of symbols is critical be that the zero is narrow and unmarked and the oh has a loop at the top as in Figure 2. This convention has the desirable properties of avoiding the conflict of slashing either the oh or zero, of representing the oh in a familiar form, and of representing the oh without fundamentally altering its appearance.

1. For a sampling of opinion on this subject, see R. W. Bemer, "Towards Standards for Handwritten Zero and Oh," *Communications of the ACM*, VIII (August 1967), 513-518.
2. Revised Appendix D, X3.6.5.4. *Working Group Report* (New York: USA Standards Institute, 3 March 1967).
3. *Ibid.*
4. E. S. Pearson and H. O. Hartley, *Biometrical Tables for Statisticians*, I (Cambridge: University Press, 1958), 185.
5. A. F. Deuth, *Final Engineering Report on Informax*, No. 1176-FR-10 (New York: Hogan Labs., 30 November 1953), p. 22.
6. R. S. Easterby, "Perceptual Organization in Static Displays for Man/Machine Systems," *Ergonomics*, X (February 1967).
7. Dirk Wendt, "O or O?," *Journal of Typographic Research*, III (July 1969), 241-248.
8. Easterby, *op. cit.*
9. Pearson and Hartley, *op. cit.*

The Use of Type Damage as Evidence in Bibliographical Description

G. Thomas Tanselle

Accidental variations in the typography of books can furnish important clues about the regular processes of printing—both in compositorial analysis and in the classification and ordering of successive printings, issue, and states. The article considers the question: what degree of physical detail should be recorded in a descriptive bibliography? Examples of type-damage discovered in a collation of Herman Melville's works are illustrated.

It is an axiom of analysis in any field that accidental and unplanned features of the object under analysis may form the basis for useful analytical techniques. Bibliographers recognized early that accidental variations in books could furnish important clues about the regular processes of printing, and they saw that the aspect of the book most subject to such unplanned deviations is its typography—for there are thousands of type-impressions on every page which can vary as a result of improper inking, normal type wear, or type damage produced by careless handling. Examination of these irregularities may be helpful in different ways for books of different periods—in compositorial analysis of seventeenth-century books, for example, or in the classification and ordering of successive printings of later books. This kind of investigation has been employed so widely that many persons outside the field of bibliography have heard of it, and bibliographers are sometimes referred to, amusedly if not condescendingly, as people who study "broken types."

When an activity comes to symbolize, in the popular mind, a more complex process of which it is only a part, the result is often its misuse or abuse by those who do not understand (because they have never been introduced to) the larger process. For obvious reasons this situation has been particularly noticeable in the case of nineteenth- and twentieth-century books: by this period technological improve-

ments (especially plating) made possible numerous impressions over many years from one setting of type, impressions often not readily distinguishable from one another; these books have been available in large enough quantities to make comparison of copies generally easy; and the desire among collectors for early or scarce states has stimulated the search for points by which copies could be differentiated. The result is that bibliographies and dealers' catalogues often list points which have no significance whatever for distinguishing among copies. Some bibliographies record misprints, for instance, without indicating whether such errors occur in all copies of a given printing or persist through all printings; similarly, some dealers will say "with the broken y on p. 212" or "lacking the final punctuation on p. 57," simply because they have noticed these mistakes without knowing whether the faults may be present in every copy. In this way false "points" become established, implying states or printings which may never have existed; once announced, they tend to be self-perpetuating and difficult to eradicate, for each dealer and collector feels obliged to check the points in his copy and report the results. This is not to say that there is no legitimate use of such evidence but only that it is easily abused.

In recent years the use of the Hinman Collator has intensified the problem, for it is now possible to make complete collations of multiple copies in much less time than previously and to detect variations (in spacing, inking, or damage) which would not have been noticed by the unaided eye (at least without laborious comparison and measurement). Information of this kind is being accumulated in great quantities in connection with the editions being prepared under the auspices of the Modern Language Association's Center for Editions of American Authors. The data are essential for establishing the texts, but how much of the physical evidence turned up in these collations is significant enough to be reported in the descriptive bibliographies which are a natural by-product of the preparation of such editions?

The basic issue turns on the distinctions between analysis and description, between research and the presentation of evidence. Should a descriptive bibliography report all the physical differences between the copies examined, or only those differences which can be shown to distinguish issues or impressions? If a large number of

variations always occur together in the copies examined, is it necessary to record them all, or can one stand for the group? Is a descriptive bibliography essentially a complete record of physical details or an abbreviated guide in which certain selected details are abstracted from the fuller data? If a rationale can be evolved to answer such questions, then a routine can be worked out for compiling, analyzing, and reporting the data.

A descriptive bibliographer is necessarily concerned with type, since inked type-impressions are one of the two principal physical elements which constitute a book (the other, of course, is the paper on which the impressions are made). But the description of the type design and typographic layout found in a particular book is quite a different matter from the analysis of its type damage: the first is concerned with the planned features of the book, the second with the unplanned. Since one aim of a bibliographical description is to record the characteristics of an "ideal copy"¹ of a book (eliminating those features which are unplanned abnormalities of individual copies), the section of a description on "Typography" takes up only the typographic elements intended to be present by the publisher, printer, or designer, and not those variations (such as defective inking) which obviously are not part of the consciously planned design. Even if every copy examined shows identical damage to a particular letter, it would be absurd to suppose that this damage was part of the design; the "ideal copy" is thus an abstraction to which, in some cases, no actual copy may conform.²

Although in practice there is generally no difficulty in distinguishing between the planned and unplanned features of a book's typography, theoretically this distinction emerges from a close examination of a large number of copies. The precise description of individual copies (including those features which may turn out to belong to only one copy) must precede the abstracted description of an ideal copy. Surveying damaged letters in individual copies is therefore part of the analysis which underlies the final description, part of the research which must precede—but not necessarily be fully recorded in—the final report. If a bibliographical description were not conceived as the description of an ideal copy it would not be a finished piece of research, for the purpose of a final report is to reveal order and

meaning in the assembled data: separate descriptions of individual copies, with all their peculiarities, would represent only the raw material. The bibliographer, understanding that his goal is the description of an ideal copy, will nevertheless record in his own notes typographic variations among copies, for he cannot know in advance what significance may attach to them; but these variations—except for the ones he concludes to be intentional—will not be included in the paragraph on “Typography” in his completed description.

If a report on type damage does not form part of an account of a book’s typography, it may yet serve an important function in a descriptive bibliography. The three principal uses to which type-damage evidence has been put are (1) the analysis of the habits of individual compositors and the determination of the sequence of formes through the press; (2) the identification of printers and the establishment of the history of particular fonts of type, as they are passed from one printer to another; and (3) the classification of issues and impressions. Each of these impinges on bibliographical description in a different way, but all three tend to make the bibliographer include somewhere in his description more of the data relating to unplanned or accidental features of a book.

The analysis of the recurrence of particular pieces of damaged type in order to identify the shares of compositors and to ascertain the order of formes through the press has been used most extensively for English books of the sixteenth and seventeenth centuries. Such a procedure presupposes that each compositor was assigned to a specific case of type, so that the presence on a printed page of an impression made by an identifiable piece of type is an indication of the person who set (and later distributed) that type; it also presupposes that the supply of type was not large, so that damaged types would not be discarded and would in fact be reused frequently. The technique, therefore, is not useful in later periods, when fewer irregular type-impressions appear in books and when the ordinary resources of printers are greater; and it obviously has no relevance to those nineteenth- and twentieth-century books in which the damage is plate-rather than type-damage or to those which were not hand-set. In the case of Renaissance books, however, recognizably damaged types afford an opportunity for determining the maximum interval between the distribution of one forme and the composition of another

and, in conjunction with spelling analysis, for ascertaining the dividing lines between the work of various compositors; routine methods for this kind of analysis and the application of the resulting evidence to the solution of textual problems have been skilfully worked out by a number of bibliographers, notably Charlton Hinman and Robert K. Turner, Jr.³

Although this use of type-damage evidence is essential for the preparation of a critical edition, how much of it should be recorded in a descriptive bibliography? Is a descriptive bibliographer obliged to pursue this sort of extended analysis if he is not also preparing an edition? Granted that the damage is not part of the planned typography of a book, if it is a physical detail of which important use can be made, should a report of it be included in the description? Would the usefulness of this report warrant the time involved in its preparation, the space it would occupy in the published bibliography, and the decreased production of bibliographies which such a requirement would necessarily entail? If the bibliographer has examined all known copies of a book, is there less (or more) reason for including a report of type damage?

These basic questions can also be asked in connection with the other uses of type-damage evidence. It is sometimes possible, for example, to identify the printer of a particular book by matching the damaged or defective types used in it with those found in other books of which the printer is known. Similarly, if a number of identically abnormal types turn up in the work of two printers several years apart, a partial history of this specific font can be established, furnishing a clue for further investigation into the relationship between the printers. A technique of “fingerprinting” type to detect such peculiarities or defects resulting from the casting process has been developed by John Cook Wyllie, who described his scheme in the Rosenbach lectures of 1960.⁴ The method is analogous to one long used by bibliographers for dating books by analyzing the imperfections in woodcut illustrations (as evidence of the gradual deterioration of the blocks through wear). This use of type-damage evidence—like the preceding one—is, for obvious reasons, more applicable to books of earlier periods. Once a printer is established by this means, how much of the evidence need be presented in a descriptive bibliography? Is it enough to name him, or should a few easily

recognizable types be mentioned to show how the identification was made, or should all the evidence be recorded? Even for books in which the printer signed his work, should all identifiable imperfections in the types be listed in order to establish a body of evidence which would be potentially useful in the investigation of books by unknown printers?

The most widespread use of type-damage evidence is in distinguishing printings, issues, or states—not otherwise identifiable—of nineteenth- and twentieth-century books. The method was popularized in the 1920s by Merle Johnson in his influential guides for book collectors. In his *High Spots of American Literature*, he noted that he had been thought a “crank as to ‘broken type’ ”; but the system he said, was “only modern scientific methods getting into the determination of first editions.” He then proceeded to outline the theory:

Up to a certain period books were printed from the actual type. Then came the “plates,” and in the later books of huge editions, many plates on many presses. But in the handling of type or plates for a second edition [i.e., impression] something *must* happen. A corner of a plate is dented when it is put in or taken out of storage; if the damage is very obvious, it is patched with new type, and, to a trained eye, that patch is also obvious.

The “rule of thumb” as to first edition, when more than one edition appears in the first year of printing, is to compare the variorum copies in the first year with an acknowledged reprint and whichever agrees with the reprint is a second edition.⁵

His *American First Editions*, which appeared in the same year, occasionally recorded instances of damaged type which helped to differentiate impressions or issues of particular books; and its second edition, three years later, contained a somewhat more sophisticated statement of the method:

The great majority of the books herein listed were not printed from the original types but from stereotyped or electrotyped plates. The study of the effect of wear caused by repeated printings from such plates has entered largely into the determination of the various states of these books; a scientific study based on physical evidence, a more reliable source than the fallible memories of publishers, authors, or printers. The physical evidence of continued printings is always observable in later printings; comparison of differing states of early printings with an admitted later printing will

always determine the first state. Printing from the original types, as before the forties, with occasional printings from type thereafter, and printing on multiple presses from duplicate electroplates from one master-mold are matters concerning but few of the books in these lists.⁶

After another three years, Johnson issued a revised version of his bibliography of Mark Twain (originally published in 1910). In the preface he explained that errors were sometimes corrected in plates after a number of copies had been printed, and he remarked that the “study of progressive wear on stereotype or electroplates”⁷ was useful in this connection. His chief illustration in the bibliography was the elaborate discussion of *Huckleberry Finn* (pp. 44–50), which included an analysis of the various states of the page number “155.” Since he was working in the days before Hinman Collators, he had to use a magnifying glass and calipers in order to measure defective letters or variations in spacing; and he realized (as some of his followers did not) that the presence of the earlier state of any particular variation did not necessarily signify the earlier state of the entire book but only of the gathering involved (p. 47).

Further cautions about the use of such evidence were issued in the 1930s by Percy Muir, in his two volumes of *Points*. In 1931 he emphasized the fact that “it may well be impossible to find any legitimate copy of the book in the first state throughout”;⁸ his chapter on “The Need for Caution,” after showing the usefulness of the evidence offered by “the gradual degeneration of condition in the type-face,” asserted:

If it is realized that imperfections of type are signs of age or weakness, and that consequently their significance is limited to an indication that copies betraying the imperfection were probably printed later than the perfect ones, less will be seen in catalogues of the wild-cat descriptions now so frequent. [p. 39]

Three years later he made a stronger attack on the abuse of this technique:

This breaking down, to a greater or less degree, of portions of the type-face is the commonest form of variant, and one which occurs in almost every book printed in our time. An imperfectly cast letter, a weakness in the metal, or failure completely to lock the forme results in irregularities of printing as between the earlier and the later printed sheets. Certainly this is a chronological distinction, but it is, nevertheless, devoid of biblio-

graphical significance. Curiously enough, those who magnify the importance of these minor accidents of the printer's shop seem incapable of arguing otherwise than perversely. For although it would appear clear to the simplest intelligence that imperfections in type arise as a result of its having been used, these ridiculous persons always assume that the typeface starts in a state of imperfection and then, by some curious process which they never condescend to explain, approaches nearer and nearer to perfection the more it is used.⁹

After reciting some examples, he concluded:

It is therefore clear that in some cases these typographical peculiarities will be legitimate evidence, while in others they will not. They are evidence where, as in the illustrations to *Light Freights*, their breaking down progresses chronologically with other changes in the make-up of the book, or even, possibly, where they are themselves chronological and are the only evidence of secondariness. They are not evidence where they occur in haphazard fashion and independently of other changes, as in *The Painted Veil*. [pp. 29–30]

If Muir's strictures had been heeded, much of the later confusion about type damage would have been avoided.¹⁰

In 1936 Jacob Blanck brought out a revised edition of Johnson's *American First Editions*; his preface paid tribute to Johnson as the "chief advocate" of "the much discussed (and much misunderstood) 'broken type theory'" and made an important restatement of it:

Briefly the theory is this: that as type or plates are used certain evidences of wear occur. In the case of a book suspected of existing in two or more states, it is obvious that those copies showing the least wear or lacking damaged type (always assuming until otherwise proved that the damage occurred during printing and not before) preceded copies with the defects under observation. The presence of the defects does not indicate a later issue—but it is an *indication of when* the sheet was printed. Thus, by following the progression of the wear or damage, it is possible to determine the earliest printed copies which almost invariably are those containing the typographical errors, usually points positive of the first state.¹¹

Later bibliographers, though they often used this kind of evidence, rarely made general observations about it. In 1957, however, Matthew J. Bruccoli, in his bibliography of Cabell (for which the Hinman Collator had been employed), commented on type damage as evidence of separate impressions:

Broken letters and dented rules do not often result from the actual process of printing, but rather from handling between impressions; accordingly, the appearance of type damage in a setting may generally be taken to indicate that an impression showing damage is subsequent to an impression showing relatively less damage.¹²

If these statements can be taken to represent the theory, they do not answer some of the questions which come up in practice. Although typographical errors are different from type damage, such damage can create what appear to be errors, and the two kinds of "points" are often listed together in bibliographies. Are they "points," however, simply because they have been noted? Jacob Schwartz, in *1100 Obscure Points* (London, 1931), sometimes introduces a list by saying (as he does for Melville's *Mardi* on p. 74), "The following typographical errors are noted." The fact that errors exist is no guarantee that they will later be corrected; if they are found in all examined copies of a book, is a bibliographer wasting his readers' time when he implies that these errors are points to be checked in each copy? Similarly, Jack Potter's *A Bibliography of John Dos Passos* (Chicago, 1950) lists "Errata" for some of the books without saying whether the errors were corrected in some copies or whether they are given only as textual information. Barton Currie, in *Booth Tarkington: A Bibliography* (New York, 1932), decides to draw attention to such errors even when, in his terms, they are not significant for distinguishing first impressions; in connection with *The Plutocrat* (1927), he says, "Correction ordered March 22, 1927, page 438, line 2, *upon his hed* to *head*; presumably ran through earlier editions [impressions], hence no point" (p. 85). If this alteration is a "correction" rather than a "point," is the reader to conclude that there are no other corrections or errors? An example of a sensible use of this kind of evidence is Donald Gallup's comment on the first impression of *The Waste Land* (1922): "The first copies printed have the word 'mountain' correctly spelled in line 339 (p. 41); in later copies the 'a' has dropped out."¹³ But are there other imperfections which, if reported, would enable someone else to discover previously unnoted variations? In other words, should a description contain a long list of typographical defects on the grounds that such a list offers a more detailed description than a short selective one and that it facilitates the detection of variations? Or are the benefits to be derived from these lists insuffi-

cient to justify the effort involved in their preparation and the difficulty of using them? Can a bibliographer ever examine enough copies to feel confident that a particular point may be eliminated as definitely invariant?

All these questions, for any of the uses of type-damage evidence, are similar and spring from a basic issue: what degree of physical detail should be recorded in a descriptive bibliography?¹⁴ Whether one is reporting imperfections in the type of a sixteenth-century book to analyze the order of formes through the press, or peculiarly cast types in a seventeenth-century book to identify the printer, or plate damage in a nineteenth-century book to distinguish impressions, one must decide whether to present a carefully selected sample of the evidence as a guide to others in examining further copies or to furnish a complete list as documentation for the conclusions reached. It may be that certain kinds of analysis—such as a detailed compositorial study with full evidence—are more appropriately placed in separate articles or monographs; but since the evidence is internal—physical evidence found in the books themselves—it must be taken into account, to some degree, in a descriptive bibliography.

The nature of the problem may be clarified by looking at the two extreme possibilities. At one end of the scale would be the simple statement of conclusions, without any listing of evidence: "Inner C was distributed before inner B"; or "The printer was . . ."; or "There were three impressions during the first year." (In the third instance, however, one is forced to mention at least a single piece of evidence, if the reader is to have any means of distinguishing the impressions.) Such a procedure is indefensible, if a descriptive bibliography is to be anything more than a shorthand guide for collectors. Eliminating the evidence is not only unscholarly; it also deprives the reader of historical data which might be of use to him in another connection. By definition a descriptive bibliographer must describe; and description entails more than the notation of the minimum number of apparently "significant" features for the bibliographical analysis of one work. The bibliographer is further obliged to contribute to a larger body of information, and any descriptive bibliography should be, in effect, a partial history of printing. Details which may turn out to be unimportant in analyzing the printing of a particular book or determining the number of impressions it went

through may nevertheless furnish important corroborative evidence to another bibliographer dealing with a different book of the same period. A descriptive bibliography is a history, and the history of the printing and publication of one book, or of one author's books, will eventually be consolidated with other such histories to form a more general history of printing or of publishing in a given period or country.

If the elimination of detailed evidence in a descriptive bibliography cannot be defended, the opposite extreme of recording the evidence in its entirety is neither possible nor desirable. It is not possible because the precise physical characteristics of any material object, being infinite, can never be completely recorded; and it is not desirable because attention to this degree of detail would reveal differences in every copy of a book and thus defeat the purpose of a bibliography. Although every copy of an edition or impression, like every item in any other group of supposedly identical objects, is in fact different, the bibliographical concept of *state* loses its significance if each copy of a book can be said to constitute a separate state. The bibliographer's job, like that of any other historian, is to find meaningful patterns which consolidate, rather than separate, individual examples. Just as the basic description of a book must represent a generalized "ideal copy," so the account of defects or unplanned variations must emphasize relationships among copies, not unique deviations of single copies. Any list of physical evidence, therefore, must be a selective one, carefully formed according to a guiding principle.

Between the two extremes, the exact point at which any bibliographer should operate cannot be prescribed in advance, since it depends on the nature of the material to be described. The only way in which the bibliographer can put himself in a position to judge the appropriate amount of detail is to examine as many copies as possible—preferably all extant copies, though this goal is obviously less feasible for many books of the nineteenth and twentieth centuries. Even when all known copies are examined, there is always the possibility that another copy will eventually come to light which overthrows a theory based on the details observed in those copies; strictly speaking, a bibliographer cannot rule out any detail on the grounds that it will never be of use to anyone at any time. But a selection of

details is inevitable and desirable, and the only basis for making an intelligent selection is the most thorough knowledge possible of the characteristics of the known copies and the variations among them.

The number of points which a bibliographer must check will naturally be much greater than the number he finally reports, because he cannot predict in advance which will be worth checking and reporting. After he has completed his checking, he will know what typographical variations exist in the copies he has examined, and he will have the specialized information necessary to judge which may reasonably be said to constitute "states," which are essential to report (for a printing analysis or the differentiating of impressions, issues, or states), which are desirable to report (for what they reveal of the printing practice of the period or for their potential usefulness in distinguishing still further impressions, issues, or states), and which can be eliminated (with a minimum of risk that valuable evidence is thereby concealed). No rigid rules can be formulated for making these distinctions, because they must vary with the material and must rest in every case on an informed (though still necessarily subjective) judgment. If the bibliographer understands that he is contributing to the historical study of publishing as well as producing a guide to one author's books, that judgment will emerge, in the case of each detail of type damage, from a process of weighing its potential value for future research against its importance now. Such decisions can never be simple or clear-cut, but they need not be aimless; that they have a subjective element need not mean that there is no rationale behind them.

1. Fredson Bowers, *Principles of Bibliographical Description* (Princeton, 1949), pp. 113–123, 404–406; the bibliographical description of typography is taken up on pp. 300–306, 344–347, 444–446. See also my essay on "The Identification of Type Faces in Bibliographical Description," *Papers of the Bibliographical Society of America*, LX (1966), 185–202; also in *JTR*, I (October 1967), 427–447.

2. Bowers's basic definition of "ideal copy" (p. 113) refers only to the physical construction of a book and thus affects only the collational formula and the contents note. It seems useful, however, to extend the concept to other sections of the description as well, in order to emphasize the important distinction between a description of an individual copy and a standard of reference based on the exami-

nation of many copies. Just as the collational formula attempts to represent what the printer considered "the final and most perfect state of the book" (excluding the imperfections of individual copies), so the description of typography provides an account (using "typical" pages, as Bowers points out on p. 302) of the basic typographic design of the book (excluding peculiarities or abnormalities). If the idiosyncrasies (whether in typography or in collation) of particular copies have value as bibliographical evidence, they can be discussed elsewhere in the description. Bowers suggests this extension of the concept in his comments on the relation of press-correction to "ideal copy": "ideal copy in its true sense of physical make-up is not affected; nevertheless, one would certainly choose the details of the corrected form to transcribe or note in one's description as the 'ideal' form, listing the other form as a variant" (p. 114). "Ideal copy," in this extended sense, is a convenient way of referring to the hypothetical copy represented by the basic description in all its details; in some instances, no one surviving copy may exhibit all the characteristics of the "ideal copy" (cf. Bowers, pp. 117–118).

3. For example, Hinman, *The Printing and Proof-reading of the First Folio of Shakespeare* (Oxford, 1963), and Turner, "Reappearing Types as Bibliographical Evidence," *Studies in Bibliography*, XIX (1966), 198–209.

4. Summarized by Jesse C. Mills, "Detective in the Book World," *Graphic Arts Review*, XXIII (May 1960), 7–8, 46–48.

5. *High Spots of American Literature* (New York, 1929), p. 109.

6. *American First Editions*, 2nd ed. (New York, 1932), p. viii.

7. *A Bibliography of the Works of Mark Twain* (New York, 1935), p. x.

8. *Points, 1874–1930* (London, 1931), p. 14.

9. *Points: Second Series, 1866–1934* (London, 1934), pp. 27–28.

10. Also in 1934 Willard E. Martin attempted to work out some rules of procedure for checking plate damage, in "The Establishment of the Order of Printings in Books Printed from Plates: Illustrated in Frank Norris's *The Octopus*, with full collations," *American Literature*, V (1934–1935), 17–28. Although he recognized that damage does not necessarily distinguish separate impressions, he made a false distinction between plate alterations of interest "only to the collector" (corrections of plate damage) and those of interest to the scholar ("critical"—that is, textual—changes). His system did not require complete collations and did not therefore recognize such possible complications as copies with mixed sheets.

11. *American First Editions*, 3rd ed. (New York, 1936), p. viii.

12. *James Branch Cabell: A Bibliography—Part II: Notes on the Cabell Collections at the University of Virginia* (Charlottesville, 1957), p. 10.

13. *T. S. Eliot: A Bibliography* (London, 1952), p. 7.

14. The general problem of accuracy and detail in descriptive bibliography is discussed in my "Tolerances in Bibliographical Description," *The Library*, 5th, ser., XXIII (1968), 1–12. The subject is also touched upon by Fredson Bowers in "Bibliography and Restoration Drama," in *Bibliography: Papers Read at a Clark Library Seminar, May 7, 1966* (Los Angeles, 1966), pp. 4–5, 8–9.

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NOTE

This article consists of the introduction and first section of an essay originally published in *The Library*, 5th series, XXIII (December 1968), 328-351. The second section of the original goes on to suggest the details of a practical routine for discovering and recording type damage—a procedure involving four stages: the multiple collation of copies on the Hinman Collator, the preparation of a collation record for use in checking other copies, the examination of many (if not all) of the existing copies, and the reporting of the resulting data in a descriptive bibliography. Examples of type damage are cited from the collations of Herman Melville's works performed by the staff of the Northwestern-Newberry Edition of *The Writings of Herman Melville* (1968-). Although the original essay does not include actual illustrations of type damage, several are provided here. Drawn from five of Melville's books, they show damage to a rule (Fig. 1), to page numbers (Fig. 5), and to letters along a margin (Figs. 3 and 6) and in the middle of a page (Fig. 2), as well as damage which completely obliterates a mark of punctuation (Fig. 4); all these kinds of damage furnish useful evidence in bibliographical analysis.

G. T. T.

OPPOSITE

Figure 1. In the 1846 English edition of Herman Melville's *Typee*, the second state of page 19 has a damaged rule beneath the running title. This kind of damage, suggesting that some alteration may have taken place, could provide the clue which would cause the bibliographer to examine this point in each copy and would thus result in the discovery of the first state. After a copy of the first state is located, one can see that the rule was damaged in the course of removing the final "a" from "Pomarea."

Figure 2. Copies of the American edition of Melville's *Omoo* with the earliest title page (dated 1847 and not bearing an indication of a later impression) exist in two states, which can be distinguished by three instances of damage on page 269: the words "long," "of," and "him" (in the third, fourth, and thirteenth lines of the illustration).

ate queen, Pomarea, incapable of averting the impending calamity, terrified at the arrogance of the insolent Frenchman,

ate queen, Pomare, incapable of averting the impending calamity, terrified at the arrogance of the insolent Frenchman,

sharks with the talons of hawks clawing a knot left projecting from the wood.

The canoe was at least forty feet long, about two wide, and four deep. The upper part—consisting of narrow planks laced together with cords of sinate—had in many places fallen off, and lay decaying upon the ground. Still, there were ample accommodations left for sleeping; and in we sprang—the doctor into the bow, and I, into the stern. I soon fell asleep; but waking suddenly, cramped in every joint from my constrained posture, I thought, for an instant, that I must have been prematurely screwed down in my coffin.

Presenting my compliments to Long Ghost, I asked how it fared with *him*.

"Bad enough," he replied, as he tossed about in the outland-

sharks with the talons of hawks clawing a knot left projecting from the wood.

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against the state, might be tried by twelve good men and true. These twelve to be unobnoxious to the party or parties concerned; their peers; and previously unbiased touching the matter at issue. Furthermore, that unanimity in these twelve should be indispensable to a verdict; and no dinner be vouchsafed till unanimity came.

Loud and long laughed King Media in scorn.

VOL. I.—K

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VOL. I.—K

Figure 3. Variation within a single impression is illustrated by the damage to the word "scorn" in the last line of page 217 (and "and" two lines above) in the first volume of the 1864 American impression of Melville's *Mardi* (1849).

condition of the great bulk of sailors to the rest of mankind, seems to remain pretty much where it was, a century ago.

It is too much the custom, perhaps, to regard as a special advance, that unavoidable, and merely participative progress, which any one class makes in sharing the general movement of the race. Thus, because the sailor, who to-day steers the

H*

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H*

Figure 4. A reader of the 1875 American impression (the second illustration) of Melville's *Redburn* (1849) would not realize that a comma originally followed the word "Thus" in the last line of page 177. The comma (as well as the period after "race") is still visible in the immediately preceding impression, that of 1863 (the first illustration). In this way type damage often creates a textual variant.

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Such are the lamentable effects of suddenly and completely releasing "the people" of a man-of-war from arbitrary discipline. It shows that, to such, "liberty," at first, must be administered in small and moderate quantities, increasing with the patient's capacity to make a good use of it.

THE WORLD IN A MAN-OF-WAR. 269

them drank a good deal too much; and when they came on board, the Captain ordered them to be sewed up in their hammocks, to cut short their obstreperous capers till sober.

This shows how unwise it is to allow children yet in their teens to wander so far from home. It more especially illus-

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Figure 5. Copies of the American edition of Melville's *White-Jacket* (1850) exist both with and without damaged page numbers on pages 268 and 269. Since the sheet with the damaged numbers is generally found in copies which have later states of type damage in eleven other formes, there is strong evidence that two 1850 impressions exist.

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R. 239	R. 239	R. 267	R. 267
't that 'ere Arn't that	't that 'ere Arn't that	to talk very ingway, tak- usly, so that intoxicated, though but t some indi- t upon these toms—even t have previ- ome persons ly make up nder its in- ecisely as if	to talk very ingway, tak- usly, so that y intoxicated, l though but et some indi- rt upon these toms—even t have previ- ome persons ly make up nder its in- recisely as if
onse; "the ship like a oice of my at it with he bags of	onse; "the ship like a oice of my at it with the bags of	atches were e. She was ck resounded s from shore	atches were e. She was ck resounded s from shore
y well stare s on either t it! How i; be pru- s accounts,	y well stare s on either t it! How h; be pru- s accounts,	which have upon other on board, in the English some disso- andish port,	which have upon other on board, in the English y some disso- landish port,
ie quarter- the other, nch of old it."	ie quarter- the other, nch of old it."	e, which in down three d souls that	e, which in down three d souls that
er. "How gun-room. y fathoms	er. "How gun-room. y fathoms	ention of ated a very n, lethargic n abdomen. were more ip's galley	ention of ated a very n, lethargic n abdomen, were more ip's galley.
auctioneer,	auctioneer,		
the hold. schooner? hts."	f the hold. schooner? ghts."		
d a mizzen-	d a mizzen-		
w—start it, it <i>must</i> be	w—start it, it <i>must</i> be		
ou ought to	ou ought to		

Figure 6. Two of the other instances of type damage which distinguish between the two 1850 impressions of the American edition of *White-Jacket* occur along the right margins of pages 239 and 267.

A Report Generator Approach to Automated Page Composition

J. R. Burns

Because of restrictions in the practical production of multiple copies of computer output by a line printer, a high-speed photocomposition system—the Master Typography System—was developed to work in conjunction with the Linotron 1010 at the US Government Printing Office. The system composes pages of repetitive, computer-based information using the report generator approach dedicated to a limited area of concern. The system is described and some typical output is illustrated.

The Federal Government is the largest user of computer equipment in the United States and frequently senses needs and deficiencies which hamper effective utilization of this equipment long before other users. As early as 1962 the Government had become aware of the inability of existing computer equipment to produce economically output when the number of copies exceeded some small amount.

The line printer is still the primary computer output device. Line-printer listings can be used in three different ways, the manner in which they are utilized being a function of the type and volume of distribution required.

When the number of copies is very small (less than 10), either a Multilith master or multi-part paper is used in the line printer; sometimes multiple passes through the computer are taken. The second method is to produce one copy of the listing and use photoreduction techniques for offset printing. The third method is to produce a source document; that is, to use the computer output to direct printing technicians who utilize classic graphic arts composition methods.

The line printer operates at a relatively high rate of speed. Its output, however, is crude from a graphic arts standpoint. A lot of space is wasted on the printed form; so much, in fact, that many publications consisting of totally computer-based data could not

economically use the photo-reduction technique and would have to be recomposed using classic methods.

In undertaking the study of possible alternate techniques, it was not just the problems of 1962 that concerned the Government but their correct anticipation that the amount of data within computer files would continue to increase at a phenomenal rate and that by the early 1970's many of the Government's computers would be devoted entirely to driving line printers if an alternative approach to the composition problem were not developed.

The primary observation of this study was that a high-speed, computer-compatible photocomposition device was needed which could replace the line printer's function when numerous copies were required. This device would be operated as a computer peripheral and dedicated entirely to the task of producing film for use in the production of offset printing plates.

The photocomposer would be capable of producing graphic arts quality output, and its ability to vary character width would enable it to place approximately 50% more characters on a photo-composed page than the line printer with fixed-width characters could. The economic ramifications of such a device were obvious. There would be 50% fewer pages to compose, 50% fewer plates, and 50% less paper. Distribution and storage costs would be reduced, and legibility would be greatly improved. Such a machine, however, would not be universally applicable to all the Government's printing needs. Only a subset of all graphic arts capabilities would be incorporated into the device, since it was intended to replace the line printer's function in composition of pages at a high rate of speed, not to produce display advertisements. The point-size range would be limited, the page size would be restricted, and the data would have to be computer-based.

As a result of the study, the Government undertook (in conjunction with private industry) the development of a system involving both hardware and software. Its hardware component is the Linotron 1010, the photocomposition device at the Government Printing Office. Its software component is called the Master Typography System and is involved with the extraction of data from its computer base.

This system concerns itself with very mundane applications, from a graphic arts standpoint. It composes numerous pages of repetitive,

computer-based information—such as technical abstract bulletins and parts lists. The typographic problems involved are less complex than those encountered in the composition of, for example, newspaper pages. The characteristics of the data which the system accepts are stringently and very explicitly defined. Data is already resident within a computer for some other purpose—inventory, accounting, etc.—and composed output is intended to be a by-product. Composition costs must be a primary concern. In newspaper production a page is reproduced hundreds of thousands of times; composition is a small portion of the overall cost. When the number of copies is small, composition becomes a large part of the production cost.

Using computers to compose complete pages is a relatively new application. Three basic approaches have been taken in the generation of software for this purpose.

The first method of automating the composition process can be compared to a computer's assembly language, since it requires instruction at a basic level. Several photocomposition systems of this sort have been developed. Their common characteristic is that they require the user to insert into his keyboarded or computer-based data, functions indicating the nature, extent, and duration of each element of the typographic process which the computer is expected to direct. Specially trained mark-up people and keyboarders are required. The result is up to a 30% increase in the number of keystrokes required to produce a manuscript. The system, however, maintains enough latitude to allow for composition of even the most sophisticated graphic arts applications.

The second method can be categorized as a language approach, similar to COBOL, the compiler-level language of the economic community. Different accounting problems are solved by writing different COBOL programs. The language approach to computerized photocomposition assume that the best method to automate page composition is to write a "program" in a typographic language for each particular job. Accountants, unfortunately, do not write COBOL programs in practice; nor are typographers going to be able to write typographic language programs.

The virtue, or vice, of both of these methods lies in their attempt to apply *all* the rules and techniques of graphic arts. Their output

can, in most cases, approximate what a typographer can manually accomplish.

The third method is the report generator approach to automated page composition, a compiler-level language dedicated to a *limited* area of concern. The commercial community's report generator is devoted to producing financial reports. Report generator requires that the user describe: (a) the file—the most general or largest common environmental characteristics data have; (b) the record—the specific characteristics of each of the individual components of the file, along with any indicators contained within the input; and (c) the process—a limited amount of processing information; what to do with input data when an indicator is or is not encountered within the record. The number of different ways data can be processed is limited.

The Master Typography System uses this technique. It requires that a given typographic application be analyzed and that someone—preferably someone familiar with typography—describe the system's equivalent of the file; that is, its page environment. He must describe the equivalent of the records, or components of the file; in this case, the paragraphs, lines, or line segments comprising the page. The processing information is not included in the job description, however. The process-flow directions required by the system are embedded in it. Only a discreet number of typographic events are allowable.

Switches within the system are set on or off depending upon conditions encountered during the generation of a page, but the Typography System only allows data to pass through the logical components according to a limited number of pre-defined routes. The system does not pretend to have taken into account all possible combinations of typographic occurrences, but it does encompass many sophisticated components of the page and line logic required in the generation of the specific kinds of jobs it was developed to handle.

Figure 1 is a representative page from the Army, Navy, Air Force, and Marine cross-reference listing which relates Federal stock numbers to industry part numbers. It is published yearly with quarterly supplements; 50,000 original pages are composed per year. On an IBM 360 Model 50 composition takes 20 seconds per page; phototypesetting time on the Linotron 1010 is 14 seconds per page. Notice that the page has four columns; the job has no hyphenation

but does have first line/last line entries which the system's software must produce.

Figure 2 is a page from the *National Zip Code Directory*. This six-column job runs approximately 1600 original pages per year with quarterly supplements averaging 125 pages. Computer time runs 20 seconds per page; composition on the 1010 takes 15 seconds per page.

Figure 3 is a page from the Navy's *Thesaurus of Engineering Terms* which runs about 660 pages. While it appears simple in format, it is fairly complex from a software standpoint. Notice the continued heading "Air Pollution"—the fluid nature of our system's page formatting necessitates a substantial set of logic equations to implement automation of the insertion of such headings. The first entry in column two, for example, might initially be placed at the bottom of column one. It is not good typography to end a column with a bold subhead, so the system moved this entry together with the following italic line to column two. A decision by the system to perform such a move is made after the fact, so to speak. If such a decision were made at the end of the last column, the last-entry logic is effected. For example, "Aldosterone", if moved to the next page, is no longer this page's last entry nor the next page's continued heading. Our system accommodates up to seven levels or hierarchies of headings which further complicate heading logic.

Figure 4 is a page from the *United States Government Research and Development Report*, a bi-monthly publication running about 200 pages per issue. The computer takes about 17 seconds per page; the composer requires approximately 20 seconds per page.

Figures 5 and 6 show a page from the *National Directory of Post Offices* and the Master Typography System forms which were used to direct our report generator. An analyst was required to insert into the file specification form of the report generator (the form equivalent to our page descriptor form) information indicating that a representative page in this particular application was five columns, that the column separation factor or width was 100 points, and that the column length was 707 points. He also indicated that if a page were to be set short due to insufficient data, the data was to be distributed among all five columns, and justified only when the resultant column depth was greater than the justification tolerance, 200 points. The remainder of the page descriptor portion of this form is devoted to the

ALPHABETICAL LIST OF POST OFFICES BY ZIP CODE AND SECTIONAL CENTERS

(A, O, & P are part office)

Post Office	Sectional Center	Post Office	Sectional Center
01000	PITTSFIELD	01010	WATERBURY
01001	PITTSFIELD	01011	WATERBURY
01002	PITTSFIELD	01012	WATERBURY
01003	PITTSFIELD	01013	WATERBURY
01004	PITTSFIELD	01014	WATERBURY
01005	PITTSFIELD	01015	WATERBURY
01006	PITTSFIELD	01016	WATERBURY
01007	PITTSFIELD	01017	WATERBURY
01008	PITTSFIELD	01018	WATERBURY
01009	PITTSFIELD	01019	WATERBURY
01010	PITTSFIELD	01020	WATERBURY
01011	PITTSFIELD	01021	WATERBURY
01012	PITTSFIELD	01022	WATERBURY
01013	PITTSFIELD	01023	WATERBURY
01014	PITTSFIELD	01024	WATERBURY
01015	PITTSFIELD	01025	WATERBURY
01016	PITTSFIELD	01026	WATERBURY
01017	PITTSFIELD	01027	WATERBURY
01018	PITTSFIELD	01028	WATERBURY
01019	PITTSFIELD	01029	WATERBURY
01020	PITTSFIELD	01030	WATERBURY
01021	PITTSFIELD	01031	WATERBURY
01022	PITTSFIELD	01032	WATERBURY
01023	PITTSFIELD	01033	WATERBURY
01024	PITTSFIELD	01034	WATERBURY
01025	PITTSFIELD	01035	WATERBURY
01026	PITTSFIELD	01036	WATERBURY
01027	PITTSFIELD	01037	WATERBURY
01028	PITTSFIELD	01038	WATERBURY
01029	PITTSFIELD	01039	WATERBURY
01030	PITTSFIELD	01040	WATERBURY
01031	PITTSFIELD	01041	WATERBURY
01032	PITTSFIELD	01042	WATERBURY
01033	PITTSFIELD	01043	WATERBURY
01034	PITTSFIELD	01044	WATERBURY
01035	PITTSFIELD	01045	WATERBURY
01036	PITTSFIELD	01046	WATERBURY
01037	PITTSFIELD	01047	WATERBURY
01038	PITTSFIELD	01048	WATERBURY
01039	PITTSFIELD	01049	WATERBURY
01040	PITTSFIELD	01050	WATERBURY

Figure 1. A representative page from the U.S. Army, Navy, Air Force, and Marine Master Cross Reference List. (All sample pages illustrated are produced from actual Linotron 1010 output.)

Figure 2. A page from the National Zip Code Directory.

AND DEVELOPMENT REPORTS

01051	GREENFIELD	01051	WATERBURY
01052	GREENFIELD	01052	WATERBURY
01053	GREENFIELD	01053	WATERBURY
01054	GREENFIELD	01054	WATERBURY
01055	GREENFIELD	01055	WATERBURY
01056	GREENFIELD	01056	WATERBURY
01057	GREENFIELD	01057	WATERBURY
01058	GREENFIELD	01058	WATERBURY
01059	GREENFIELD	01059	WATERBURY
01060	GREENFIELD	01060	WATERBURY
01061	GREENFIELD	01061	WATERBURY
01062	GREENFIELD	01062	WATERBURY
01063	GREENFIELD	01063	WATERBURY
01064	GREENFIELD	01064	WATERBURY
01065	GREENFIELD	01065	WATERBURY
01066	GREENFIELD	01066	WATERBURY
01067	GREENFIELD	01067	WATERBURY
01068	GREENFIELD	01068	WATERBURY
01069	GREENFIELD	01069	WATERBURY
01070	GREENFIELD	01070	WATERBURY
01071	GREENFIELD	01071	WATERBURY
01072	GREENFIELD	01072	WATERBURY
01073	GREENFIELD	01073	WATERBURY
01074	GREENFIELD	01074	WATERBURY
01075	GREENFIELD	01075	WATERBURY

Figure 3. A page from the U.S. Navy Thesaurus of Engineering Terms.

Figure 4. A page from the United States Government Research and Development Report.

MASTER CROSS REFERENCE LIST

Number	Sectional Center	Number	Sectional Center
01080	GREENFIELD	01080	WATERBURY
01081	GREENFIELD	01081	WATERBURY
01082	GREENFIELD	01082	WATERBURY
01083	GREENFIELD	01083	WATERBURY
01084	GREENFIELD	01084	WATERBURY
01085	GREENFIELD	01085	WATERBURY
01086	GREENFIELD	01086	WATERBURY
01087	GREENFIELD	01087	WATERBURY
01088	GREENFIELD	01088	WATERBURY
01089	GREENFIELD	01089	WATERBURY
01090	GREENFIELD	01090	WATERBURY
01091	GREENFIELD	01091	WATERBURY
01092	GREENFIELD	01092	WATERBURY
01093	GREENFIELD	01093	WATERBURY
01094	GREENFIELD	01094	WATERBURY
01095	GREENFIELD	01095	WATERBURY
01096	GREENFIELD	01096	WATERBURY
01097	GREENFIELD	01097	WATERBURY
01098	GREENFIELD	01098	WATERBURY
01099	GREENFIELD	01099	WATERBURY
01100	GREENFIELD	01100	WATERBURY

THEAURUS OF TERMS

01101	GREENFIELD	01101	WATERBURY
01102	GREENFIELD	01102	WATERBURY
01103	GREENFIELD	01103	WATERBURY
01104	GREENFIELD	01104	WATERBURY
01105	GREENFIELD	01105	WATERBURY
01106	GREENFIELD	01106	WATERBURY
01107	GREENFIELD	01107	WATERBURY
01108	GREENFIELD	01108	WATERBURY
01109	GREENFIELD	01109	WATERBURY
01110	GREENFIELD	01110	WATERBURY
01111	GREENFIELD	01111	WATERBURY
01112	GREENFIELD	01112	WATERBURY
01113	GREENFIELD	01113	WATERBURY
01114	GREENFIELD	01114	WATERBURY
01115	GREENFIELD	01115	WATERBURY
01116	GREENFIELD	01116	WATERBURY
01117	GREENFIELD	01117	WATERBURY
01118	GREENFIELD	01118	WATERBURY
01119	GREENFIELD	01119	WATERBURY
01120	GREENFIELD	01120	WATERBURY
01121	GREENFIELD	01121	WATERBURY
01122	GREENFIELD	01122	WATERBURY
01123	GREENFIELD	01123	WATERBURY
01124	GREENFIELD	01124	WATERBURY
01125	GREENFIELD	01125	WATERBURY
01126	GREENFIELD	01126	WATERBURY
01127	GREENFIELD	01127	WATERBURY
01128	GREENFIELD	01128	WATERBURY
01129	GREENFIELD	01129	WATERBURY
01130	GREENFIELD	01130	WATERBURY

Information of this sort is all pertinent to the individual components of the page and is included in the item descriptor forms. Both the page and item characteristics were specified by the analyst external to the input data, that is, independent of the input data. The Master Typography System allows up to fifty item descriptors to occur on every page. Descriptors 47 and 48, as shown here, are normally used for right and left folios. Each of these examples required far less than fifty descriptors; the last example required only four. The user obviously has quite a bit of latitude in the generation and design of the page and individual items.

The unique characteristic of the overall system, due to the Linotron 1010 hardware, is its bias toward a page environment. The basic unit of composition is a page, not so much from the standpoint of the software, but because the unit of composition information within the photocomposer is a page. The Linotron 1010 is basically a closed-circuit television system capable of producing an $8 \times 10\frac{1}{2}$ -inch page with no motion of the film. It probably is one of the world's most resolute xy plotters, and zero access time is required to get to any point on the cathode display. Consequently, the software has a great deal of latitude in selecting the order in which it places characters on the page. A measure of the flexibility of the system lies in the fact that to date the Government Printing Office has photocomposed 350 different formats, totalling several hundred thousand pages. A format is defined as an entire job layout; it may have short pages and radical variations of individual page design—but it is a format. No modifications of the software has been needed. The system's aim is full-page composition with no manual intervention.

To date most other computerized composition systems have completely ignored the page-logic portion of the overall problem. There is little argument, however, that it is in full-page composition that the real economies of the photocomposition process can be realized.

This paper was presented at the conference, Where is Technology Leading Communications? held in February in Washington, D. C., and sponsored by the Engineering Writing and Speech Group of the Institute of Electrical and Electronics Engineers. Proceedings of the entire conference will be published by the Institute.

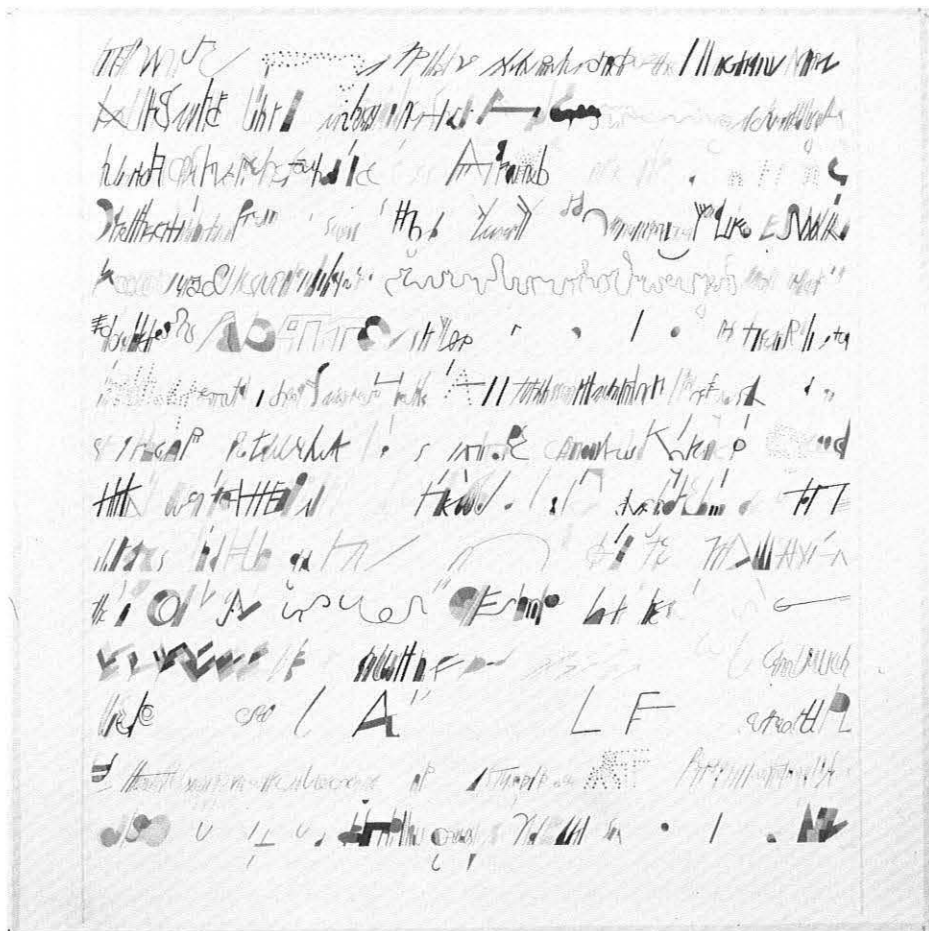
Letterforms in the Arts

This department is an international gallery for the display of artists' work (in various media) which involves the use of letterforms and related symbols. Artists, art and design schools, and other interested persons are invited to submit appropriate works and comment; communications should be addressed to the editor.

Jack Smith (1 Ashbridge Road, Leytonstone, London E11; dealer: Marlborough Fine Art, London) has had numerous one-man exhibitions and his work has been shown in such international exhibitions as the Pittsburgh International and the Venice Biennale. "He uses his picture surfaces as color fields on which to inscribe signs that range all the way from recognizable, semi-descriptive hieroglyphs whose meaning in the particular context is left open, to an invented form of writing, placed like writing on a page. Sound and silence are as much part of his purpose as visual language; interval, intensity, and density function importantly in the result" (*Art International*, March 1968). Accompanying comments are by Mr. Smith.

Various Activities No. 5, 1966.

An attempt has been made to break away from centers of interest. The painting is to be read from side to side. The marks are a kind of color shorthand, a visual equivalent of sound and speech, speed and interval; in this way they have something in common with a musical score. (A musician once remarked that he thought he could conduct the whole exhibition.) Occasionally the sound or the associations connected with a word influence the color. States of mind, changing from day to day, influence the individual forms within the painting; each form is influenced by the preceding mark; sometimes a mark is a sound. It is a mistake to try and read any passage as they only work visually; the vocabulary is one of line, mass, color, activities, and stillness; there is no word content. They can be thought of as visual poetry, but they are not to be confused with concrete poetry. It is essential that my paintings are only visually understood. They are sound scores concerned with harmonies, discords, and pauses. Certain open forms are dotted rather than firmly contained within a line; these exist as half thoughts. Each painting contains passages which are tranquil or disturbed—they occasionally produce states of unease in the spectator, possibly because they contain conflicting emotions. The harmony of the painting is established intuitively. The forms are not always ideograms or

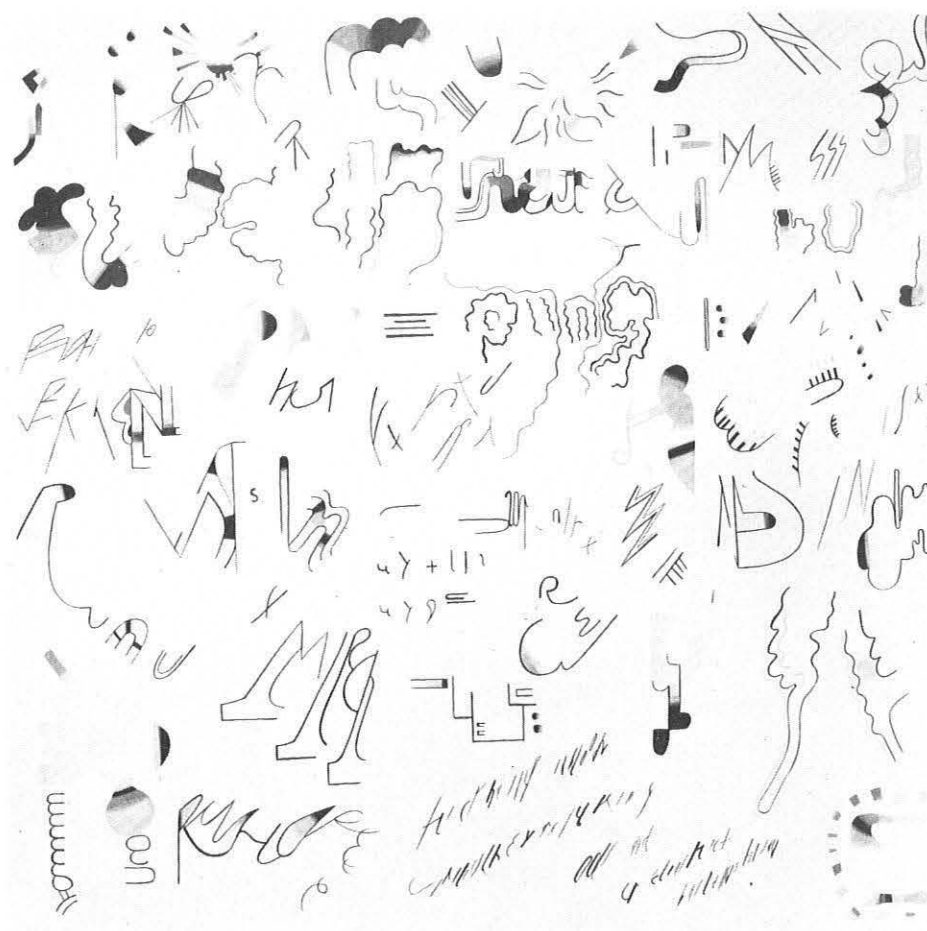


Various Activities No. 5, 1966, oil on canvas, 60 × 60 inches.

pictograms of a word sound, sometimes the rhythm of the word-form or individual mark is used as a basis for a more complex form. I seem now to be able to build up a visual written language that can deal with any experience or sensation. A written page can be remade in the same way that an artist remakes an object. WORDS BECOME OBJECTS.

Various Activities Nature No. 1, 1966.

The format in this painting is less rigidly controlled. It does not need to be read from side to side, it is dealing with a "nature sensation." The visual

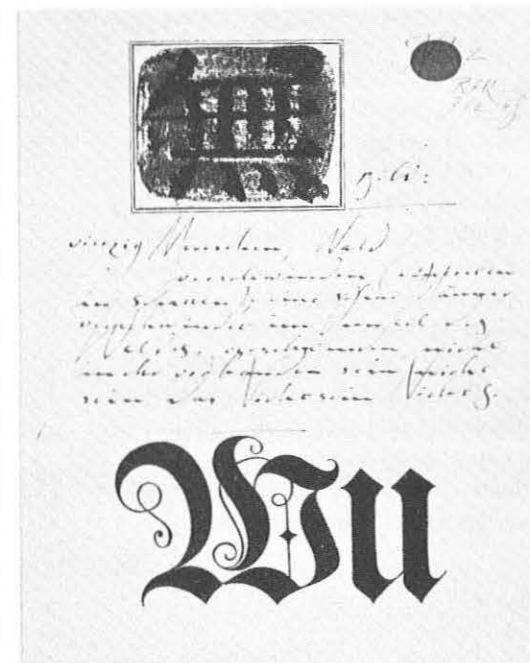


Various Activities, Nature No. 1, 1966, oil on canvas, 42 × 42 inches.

exploration of the subject is noisy and fragmentary by comparison with the other paintings. The written forms change in relation to the subject, but the forms used are not necessarily those obviously connected with the subject: though this is a "nature painting" the used-forms may individually have nothing to do with "nature sensation." Similar written forms can be used again and again in different paintings and have a totally different meaning. Though it is difficult to remember exactly the process of making this painting, I think it was concerned with a sensation of heat; yet the written forms are monochromatic.

The typographic examples shown here were created by Rudolf Franke, instructor of typography at the School of Arts and Design, Kassel, Germany. They were spontaneously written, and emanated from the idea of comparing very different typographic forms: ornamental symbols, handwriting, typography, and Chinese symbols. Accompanying comments are by Mr. Franke.

Multicolor effect, 14.8 × 21 cm., handwriting (explanatory text for »kuei«) in dark blue. The symbol was written over the text as the second work phase. Finally, an exact drawing of the word »KUEI«; the oval stamp form done in red chalk.



The possibilities of variation of typographic solutions are manifold but will in final analysis always show the individuality, the personality of the writer. The actual value of such and similar works lies in the fact that it is not possible to reproduce the same sheet twice (14 × 17.5 cm.).

Comment: Marshall McLuhan and Italic Handwriting

Lloyd Reynolds

Marshall McLuhan has nothing to say about italic handwriting. However his writing implies much and we can infer more that is of interest to teachers and writers of italic.

McLuhan has presented what, to most readers, is a startlingly unfamiliar approach to the history of culture. He emphasizes the cultural influences of the media of mass communication used throughout history, dividing this history into four periods: (a) the audile, pre-literate, (b) the manuscript, (c) the typographic, and (d) the electronic.

He stresses each medium—the dominant one in mass communication for each period—as being in itself the message. Most readers are confused by this, for we habitually concentrate on the content and ignore the medium. Yet imagine hearing a short speech delivered by an impressive speaker, then imagine what happens to it when we read it in handwriting, then printed, next see it pantomimed in silent movies, hear it read over radio, presented in sound movies, and then published afresh on television. We might conclude that the content would remain the same, yet any specialist in any one of these media would say we are wrong. The differences in the nature of media will alter our perception. They may be so subtle that we are not aware of their influences. But media, in a subliminal way, affect what we think and feel, what we actually do communicate. In any particular medium the content, the matter that is communicated, changes constantly, yet the influence of the medium persists. The fact that we are constantly fixed on the content, does not inoculate us against the unconscious effect of the medium. If “the medium is the message,” no wonder that many teachers, conditioned by the arid and invisible quality of the printed book, the typewriter, and handwriting done with a stylus-type writing tool, should be confused by italic handwriting! McLuhan criticizes the typographic as being over-specialized in its sensory appeal. It is too thinly “visual.”

The visual sense alone is called into play when we read print, and

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It is not possible to arrive at good typographic solutions without preparatory work. Beside secure typographical knowledge and prerequisite material, experiments are indispensable. All reactions produced by brush, pen, paint, and ink on the paper (which has to be very carefully selected) must be examined. An intensive study of typography confirms that at the moment of writing the formal decisions can be made. The paper quality and texture are of decisive importance. The delicate characters, which are greatly determined by mood, must be written in such a way that the surface structure reveals the character of the writing. A very sensitive book printing paper was used for all studies. Corrections and retouching are not possible with this type of paper. The illustration (31 × 19.5 cm.) shows two pages of preparatory studies.

These typographic examples were selected from a special section showing examples of Rudolf Franke's work in the May, 1968, number of *Druck: Archiv für Drucktechnik* and are reproduced here by kind permission of the publishers, P. Keppeler Verlag KG, Frankfurt/M.

apparently "seeing" tends to be what we mean when we say that we "see" what the author means. We *recognize* concepts and ideas. Most readers want to be unaware of letters, page design, etc., for they would find them distracting. Typing, if neat and clean, is "good" because they do not have to really look at it. Such people find italic "fancy," because they would prefer a plainness that makes the letters and lines invisible. To Beatrice Warde, the ideal book-opening would be a crystal goblet; we would see nothing but the wine. This is the typographical ideal—instant ideas with nothing interfering.

The MS book, on the other hand, is presented by McLuhan as involving much more than this seeing of meaning, this mere concept-recognition. It is tactual and kinetic, it has texture. It may be punctuated by letters in gold, vermilion, and blue, with ornaments to make us pause.

During the sixteenth century, the typographic books increasingly became purveyors of practical information to be acted upon, whereas the earlier typical mediaeval books were to be meditated on.

To a penman, the manuscript book reveals the touch of the pen and the kinetics of its movement. In looking at it he becomes involved, his hand wants to touch and move. One might say that the pen starts to write all over again, as if the words were being written as one gazes at them. Whether it be a form of black letter, humanistic *antiqua*, or humanistic cursive, we sense the greater friction of the pen in making the downstrokes, the relief of pressure and swiftness in the hairlines, and the rhythmic progression. One becomes conscious of the placement of the blocks of text on the carefully proportioned pages. The occasional ornament in the margins insistently calls attention to these areas.

Manuscript books, McLuhan says, are closer to speech than to printed books. In the mediaeval period, readers habitually read aloud—and spoke what they were writing down. Writing was used in the schools to teach the proper pronunciation of Latin. (I must, because of lack of space, omit any discussion of the merits and demerits of alphabetic script.) Even the content of the mediaeval book differed in many ways from that of the typographic book. The way of producing and of using the two types of book certainly came to be different.

The mediaeval lecturer was literally that; he read the text aloud to his students, and the rubrics were his actual lecture notes. The students, repeating his words to themselves, wrote down everything, producing their own text-books.

In examining the present period of electrical impulses, computers, automation, and television, we find that the new world is newer than we think and stranger than we *can* think. I dare not try the most difficult task

of explaining how greatly the television experience differs from that of the motion picture. Prolonged observation proves that television does demand more audience participation, more involvement, and gives a sense of even greater immediacy.

Critics of McLuhan have warned us against the total involvement, the simultaneity, immediacy and richness of the unified sensory experience in the new electronic media, with their powerful subliminal impact. They see it as a possible weapon that could be used by a totalitarian regime to process us into mindless conformity. No one can doubt this possibility, if he has watched teenagers almost swooning away in the trance of a psychedelic performance. It is close to the effects of drugs, to the "happy pills" of Aldous Huxley's science fiction nightmares. The psychedelic does not stimulate the critical faculty.

McLuhan is fully aware of these dangers. He is not trying to lure us into a complex and possibly dangerous electronic scene; we are already there. He assures us that he is "far from wishing to belittle the Gutenberg mechanical culture; it seems to me that *we must now work very hard to retain its achieved values*" (*The Gutenberg Galaxy*, p. 135).

To list briefly some of these values, we should include individualism, objectivity, logical thinking, rational analysis, the critical attitude, and practicality. These characteristics of the typographical culture enabled man to free himself from ancient tyrannies and gain political and economic freedom. In this century, the working classes have achieved a much higher standard of living and now racial minorities are improving their condition. Automation, a development of electronic culture, has the power, potentially, at least, of providing plenty for all. McLuhan sees technological decentralization as a consequence of electronics, but he says too little about the likelihood of greater political centralization—in short, a totalitarian state.

The dangers of any mass media of communication are difficult to recognize, writes McLuhan. The present culture is invisible and we see the past one too late—*after* we could have done something to modify its harmful effects. It is for this reason that McLuhan strives to make us aware of the nature of electronic culture *now*, when we can inoculate ourselves against its dangers. Unaware of what we are doing, we are likely to give in totally to a psychedelic swoon and lose the valuable critical rationalism which was given us by print culture.

For this reason, McLuhan writes, "Today Blake would be violently anti-Blake" (*The Gutenberg Galaxy*, p. 71). This statement is quite misleading. True, Blake would not, today, be fighting an eighteenth-century battle against a one-sided typographical culture; he would be opposing a one-

sided psychedelic specialization and over-emphasis. Blake was not merely anti-rational. What Blake insists on is balance in sensory perceptions, balance in mental functions, with no single sense perception or mental function gaining ascendancy over all the others. We must reevaluate the typographical culture today, not to revive the overspecialization on rationalism of the eighteenth century, but *to maintain* the uses of reason and scientific thinking in our electronic culture. Today even the younger students in the elementary and secondary schools are rebelling against the old conventional academic curriculum. We must *not* oppose them, but we must modify the curriculum *reasonably*, maintaining the most valuable qualities of the book-culture. Instead of fighting the electronic era and longing for "the good old days," we must bring about changes *within* the electronic, finding ways of relating the two organically.

Today children respond more readily to the "electric" media of transistor radios and television than to the printed book. These carry harmful "media fall-out" against which McLuhan says education can provide a defense (*Understanding Media*, p. 175). The danger is not so much in the content of the media, objectionable as that may be, but rather within the media themselves. To discover precisely what these dangers are is our most difficult task. Study McLuhan. But there is one approach we can take—now. To maintain what we call "language arts" skills is going to become increasingly more and more difficult. Even though the computers will be able to supply any kind of factual information in any quantity immediately, students will still have uses for reading, writing, and mathematics.

Students are impatient with and intolerant of the slow, one-at-a-time linear progression of alphabetic and book culture. It is like drinking water with a table fork, as Allan Watts says. The detachment required repels them. They seek intense involvement. Remember their light-shows. They would welcome tactual, kinetic, and strong rhythmical activity.

This brings us to Mr. Alfred Fairbank's statement, "Handwriting is a system of movements involving touch." Movements are kinetic; touch, tactual. Neither are characteristics of the dry "visual" experience of the Gutenberg culture, or mere concept-recognition called for by the typographic book. And the visual texture and swing of good handwriting appeals to any child—more than to most print-oriented teachers who are satisfied with seeing meanings only and ignoring the sensual poverty of blackboard chalk, ballpoint pens, felt pens, pencils, and other such poverty-stricken writing tools.

To the delight of the child, the edged pen is packed with sensory pleasures. In writing, the thicks of letters pull against the pen almost with resonance in the measured friction of the stroke, but as the pen leaps into

the hairline, the touch is suddenly light, a happy release. The curves of *O*, for instance, with its retardation of speed down the left side and its quickened acceleration at the base—and then the repetition of the same sensations on the right side (whether the *O* is written with one stroke or two) makes the writing of even this one letter a sensory experience to be enjoyed.

But when the movement, alternating between slow and rapid strokes, and providing subtle variations in pressure, touch, and sensations of frictions, all combine to flow in continuous rhythm, then words come more alive, for there is more sensory reality to them, more interplay of imagery to produce vital harmony. And what openness to inclusive experience, beyond haptic harmony, when the student experiences the fusion of these sensations with the meanings of the sentences. Would not such teaching of writing and reading make the subjects more significant and enjoyable and the typographic-oriented culture more welcome?

Edgar Allan Poe, whose manuscript pages show one of the most beautiful scripts in American culture, wrote: "It is certain that the mere act of inditing tends in a great degree to the logicalization of thought." Among the ten thousand and more students who study italic each year in this area, there are many instances of a child's I.Q. apparently being raised by his study of italic handwriting. One boy who was considered hopelessly retarded by parents and teachers, was given lessons in the italic script. The child's school work improved so rapidly that his indignant teacher telephoned the boy's mother and said, "I wish you would stop doing the boy's homework for him!" No one was helping him—unless it was Alfred Fairbank. The italic was helping him.

If we are to expect children to become responsible citizens, rational, critical of propaganda, and able to use books, we should give them italic handwriting as an appropriately twentieth-century introduction to the necessary field of letters.

Lloyd J. Reynolds is professor of English at Reed College (Portland, Oregon 97202). He has written widely on italic handwriting, and is chairman of the Western American Branch of the Society for Italic Handwriting.

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Comment: Publishing by Computer

R. J. Wakefield

The introduction of computers to publishing will bring a confrontation between communication by print production, whose basis is uniformity and repeatability, and communication by computer, whose basis is flexibility and individuality. The value of a computer system is not standardization, but the ability to do the one-off job as a matter of course; this is in precise contrast to the usefulness of print, which gives repeatable formalization. It helps evaluation of the significance of computers for print if both fields are considered as systems for communication.

Communication is composed of one environment sending messages to another to secure understanding of its state or purpose. Defining a communication system requires understanding of the structure of particular environments, the constraints, the points and levels of contact both internal to the environments and external to them. It also requires an understanding of the nature of the symbols that make up the messages that pass between environments. The more dimensions that communication takes place in, the greater potential for effectiveness of relationship between environments.

Print

In print publishing, one environment can be said to be the print and publishing house (acting for authors and contributors); the other, the individual reader. Messages are conveyed from one to the other by means of magazines and books. Communication of recorded information takes place largely by printed prose and black and white pictures. They are both low levels of communication. One finds it difficult to recall the experience of reading any piece of information, in contrast to hearing it. The sense of hearing receives messages in two dimensions, volume and pitch, and they are continually changing. Prose is one dimensional; though it does require change in the receiver for the text to be processed as the eye scans along the line. Black and white pictures are three dimensional, yet static. The most vital aspect in communication is the control of the factor of change taking place in more than one dimension.

It is difficult to understand a complex subject through reading alone. Understanding lies in structure, recognizing the relationship of one part of a message to another, and the relating of the message to the reader's

experience. After over-formalization, the other disadvantage of print is that communication is one way. How much quicker would a reader understand if he could enter into conversation with the author.

The principal characteristic of the system that is communication by print is that the interface or point of contact between the environments, the publisher and the reader, lies firmly with the transmitter. It has to be so because of the economics and the nature of print production.

Computers

Having described the business of publishing in terms of a communication system, the same must be done for computers. One environment is the computer, the other the user. Messages are conveyed from one to the other by the peripheral devices of the machine.

A computing system can provide a huge reservoir for information and the opportunity for high speed organization and manipulation of this information. The relative failure of computers has been in the low level of flexibility in communication with a user—in the forms of punched cards, tape, and line-printer output. Also it has proved difficult to impose structure on a specific computer environment because of the shortcomings of the notations available to instruct the machine. A further deficiency has been that once information has been entered into a computer system, it has been very difficult to re-structure the organization of this information because of the lack of a two-way, or interactive, mode of communication.

This description of computers in a communication system has got to be revised in view of two developments. One is the evolution of programming languages that allow greater ease and flexibility in the organization of the computer environment. The other is the introduction of peripheral devices like cathode ray tube consoles. A CRT device presents a means for flexible yet precise communication between man and machine. It provides opportunity for any arrangement of information in a two-dimensional layout and the factor of change is at once more congenial to man and machine than with older peripheral devices. Another advantage of a CRT console is that it allows two-way communication.

The effect of these two developments in the system that is communication by computer is that the interface or point of contact between the environments, the machine and the user, will lie with the user.

The Possible Future of Publishing

What are the implications of computers for publishing? It was mentioned above that "understanding lies in structure, recognizing the relationship of one part of a message to another, and the relating of the message to the

readers experience." There is a possibility that new computer programming notations will be adequate for the explicit relating of information. This must aid the author in his expression of his intention or "meaning" and the individual receiver in his understanding. Also a device such as a CRT allows messages to be presented in such a way that a single, complete idea is dealt with at any one time. This may take the form of a paragraph, sentence, phrase, or even a single word. This enables either the author or the reader to control the vital factor in communication, that of change. By contrast in print production this would lead to a totally uneconomic use of paper.

Finally, a computer publishing system with CRT consoles for its "readers" has the versatility to allow the reader, if he wishes, to control the representation of messages. Everyone has a preference for certain type-faces, certain spacing and layout; it aids their understanding of the content of the message. In an over-formalized society, better understanding may be deemed a worthy objective. A computer publishing system could help materially towards that objective by introducing the flexibility necessary for individual reception of information, into the formal process of publication.

The main emphasis of these proposals, however, should be that individual freedom of choice for the reception of information will only be won if there is greater discipline in the organization of the information itself.

Richard J. Wakefield is a research assistant in the Institute of Computer Science, University of London (44 Gordon Square, London WC1). He is principally concerned with the design and implementation of programming languages. Previous to entering the world of computing, he had considerable general experience in the field of paper and print.

Mr. Wakefield's comments were originally presented at a symposium, Computers in Visual Communication, organized by the Typographers' Computer Working Group of the Society of Industrial Artists & Designers and the Society of Typographic Designers, London, February 1968. The talk is printed here with the Working Group's kind permission.

Exhibition Review: The Poetry Society's Gala Exhibition, London

As part of the celebration of its sixty years of existence, the Poetry Society staged a Gala Exhibition of Poetry in London's Royal Festival Hall, 15 January to 6 February, 1969. Nearly a thousand items were included and the exhibition was seen by more than 30,000 people. Exhibits ranged from the way-out experimental in many languages (24 different countries were represented) to more conventional poetry mainly in English. For the first time, experimental poetry was placed against a background of more conventional poetry and visitors were able to see how closely it related, even though it obviously had affinities with graphic arts, typography, even sculpture and architecture. The exhibition was organized for the Poetry Society by Bob Cobbing who is himself a concrete and sound poet. He was assisted in obtaining material from abroad by David Kilburn. Bob Cobbing's introduction to the exhibition and comments on various poems follow.

This is a permissive exhibition. We let it be known that there was to be a poetry exhibition and sat back to see what would come in. No attempt has been made to illustrate a theory of poetry. Rather do we hope that the exhibits in all their variety will prompt visitors to face anew the question: what is a poem?

Clearly some of the exhibits have gone beyond the word, some even beyond the letter. But aren't there other symbols in which poetry may reside? Concrete poetry which places special emphasis on the spatial relationship of words and regards the poem "as an object to be perceived rather than read" seems to have broadened into such diversity as to "rob the label 'Concrete' of any concrete meaning whatsoever."

Over and over again we are reminded that in the arts "all borders blur," and some of these works may seem to be as near to painting or graphic art or sculpture as to poetry. "Poetry is what poets make," but many of the makers of these exhibits would not worry unduly if you gave another label than poetry to their works, although all have been specifically entered for this gala poetry exhibition.

Gala suggests an element of enjoyment, a poemfest. Many of the exhibits have given enjoyment in the making, and we hope will communicate to others enjoyment and delight. If some seem outrageous, to be outraged from time to time is probably good for us. If we feel at times that "anyone could have done that," this too is good. If we detect a do-it-yourself attitude to poetry, a suggestion that every man is his own poet, well why not? "It is a kind of game, perhaps, but so is life." Recall that first Elizabethan period when England was "a nest of singing birds."

Unfortunately, though there is poetry in abundance, the sound element is missing for we may not compete with those other sounds for which the Festival Hall was built. So it is fortunate for our exhibition that at the present a new emphasis is being placed on visual poetry—the poetry poster, the poster poem, the concrete poem, the three-dimensional poem, the machine poem—which are all here, together with some of the more obviously traditional poetry of our time. Tradition though is constantly undergoing modification, and here is the evidence for the way in which it is being modified now. If the overall impression is one of diversity, this is because poetry today is taking more diverse forms than ever before.

* * *

It was appropriate that near the entrance was a photograph of Dom Silvester Houédard over the repeated legend Borderblur Borderblur; dsh, a monk at Prinknash Abbey, Gloucestershire, is prophet, philosopher, and critic of the new poetry. He is the author of important articles in *The Aylesford Review*, notably "Beat and Afterbeat—Poetry and Theology" (Summer 1963) and "To Freshen our Sense of the Language" (Summer–Autumn 1964). He wrote an introduction (chronology) to the London Institute of Contemporary Arts Between Poetry and Painting Exhibition in 1965 and a companion introduction and chronology relating to sound poetry for Writers Forum (WF poets 15, September 1965). He was well represented in the exhibition by typestracts, by his poster "Rock Sand Tide" (designed by Simon Verity), and by examples of his plastic and transparent sandwich poems.

Also near the entrance was Kenelm Cox's "Ocean" balloon poem, and a little later his "Seasons" clock poem. Sadly, a poster incorporating a photograph of his "Three Graces"—currently touring America in the ICA's Cybernetic Serendipity Exhibition—announced a memorial Exhibition to Ken Cox who died last November as a result of injuries received in a road accident. Ken Cox was an important member of the little band of Gloucestershire kineticists and concretists which Jonathan Williams once christened the Gloup. Lisson Gallery are publishing his "Suncycle" and



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 AN EXHIBITION OF TYPES
 TRACTS BY DOM S. HOUEDARD
 OCTOBER 10 TO NOVEMBER 1
 LIBRARY CORRIDOR





Kenelm Cox

Michael McClure

LOVE LION, LIONESS
Grah Ord Glem Claw Rose Silver Silver

GAHR THY ROOH GRAHEER
GROOOOR
GRAHHR
Whah Gahr Denn Droom Ezz Hrohh Hrohh.
 -OH-
OOOOOH!
GRAYOHH
Loong Theeh Prootta Ahm Droor Slezz.


William H. Bonney


Joan Marlow

GRAH! GRAHHR GRAHHR FLECK BOOT MERCURY VAPOR GRAGHHR!
 GRAHHR GARR GARRHHR GRAGHARRI GARRI
 GARR-GHRAHHR CRANHHRI GRAGHARRI GARRI
 TOE EYES NOSE EEM-BLESH GARRI GARRI GARRI GARAM!
 SWEET DUST **GRAH!**
OF CUN AND WHITE NECK

Michael McClure



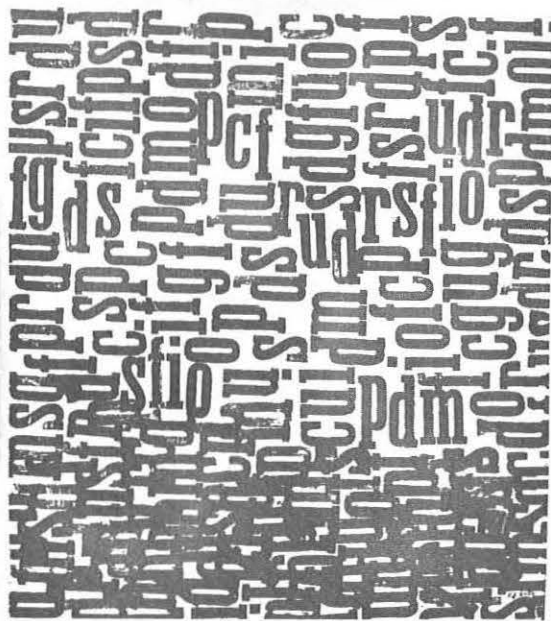
Edward Wright

“Moontrack” in their series of multiples. Three “Suncycles” glistened and twirled at the Festival Hall, music of the spheres.

“4 Katrina” by Edward Wright also glistened. It is made of tinplate, embossed from a card matrix in an etching press. The gesture is Hindu, standing for good luck. Edward Wright (typographer, painter, architect trained) has done typography for Hansjörg Mayer (poem flag), I. H. Finlay, and other experimental poets. The sun-cheese wheel-ode by dsh, a double-rolling-gloster memorial for kencox is set in Edward Wright’s Flaxman semibold typeface. “4 Katrina” is Wright’s first personal work in the field of experimental poetry.

Other members of the Gloucestershire Group were represented: Charles Verey with his magnificent eight-foot “Vowel Club,” and John Furnival with his own poems, and settings supervised by him at Bath Academy of Art of the works of Ian Hamilton Finlay, Edwin Morgan, dsh, and Jochen Gerz.

le mur



P-A Gette

France was represented by Gerz, J-F Bory, and J. Blaine who are all doing vastly important work especially relating to new concepts of the book; Henri Chopin known primarily for his contributions to Poésie Sonore; Pierre Garnier and P-A Gette. Gette, noted for his verbal crystallizations, sculptures embodying lead and wooden type-characters, showed his poster “Le Mur” which has obvious affinities with his sculptures. Type as trinket was shown by Schuldt from Germany, lettrist gee-gaws, pendants, earclips, bracelets. Bridges abounded—Michael McClure whom Dom Silvester would see as a link between concrete sound poetry and beat or after-beat, showed his poster “Love Lion, Lioness” in which he depicts Jean Harlow and Billy the Kid as if they were contestants in a boxing match, with accompanying poem in “beast language.” The poster was printed by a company that specializes in boxing posters. And so on by way of Christopher Logue’s poster poems and a C. Day Lewis poem poster to Basil Bunting, Hugh MacDiarmid and Ezra Pound, all advertised to take part in the Gala Poetry Reading in the same Festival Hall, packed to its 3200 capacity. In the event, Pound was prevented by the weather, but his presence brooded over the whole gala. Poetry has come a long way and Pound helped it along that way more than most.

All borders blur. It is almost as if poetry is resuming its rightful place as leading art form. Here, painting, graphic art, sculpture, typography, kinetic art, the poster, the book as an art form, architecture, landscape gardening, almost what you will, were showing their debt to an all-informing poetic spirit born of a distrust of rigidity, uniformity, authority—a revolution brought about largely by the little presses, particularly of England and America, many of whom were well served in this exhibition by their numerous products.

When a poetry exhibition becomes a place of pilgrimage for typographer, designer, painter, sculptor, theatre director, and happenner—who all recognize that there is something of value to be absorbed—it may be said that the state of poetry is very healthy indeed.

Bob Cobbing

Bob Cobbing (262 Randolph Avenue, London W9) has made typewriter and mimeograph monotypes from 1942 on, sound poems since 1954, has recorded discs and tapes of sound poetry with Ernst Jandl and the BBC Radiophonic Workshop. Publications: *Massacre of the Innocents* (1963), *26 Sound Poems* (1965), *Eyearun*, *Chamber Music* (1966), *Kurrirurriri* (1967), *So* (1968), *Octo* (1969); publisher of *Writers Forum*. Cobbing ran what was the best poetry bookshop in London, has given readings and recordings, as well as participated in experiments in poetic education with the Institute of Education in London.

Erik Dal, *Scandinavian Bookmaking in the Twentieth Century*. Copenhagen: Christian Ejlers Forlag (also published—Urbana: The University of Illinois Press), 1968. 128 pp. \$5.50.

This book attempts to reconcile two Scandinavian sayings and a common conversational opening: "All culture has foreign roots, only barbarianism is native,"¹ "We are only a small nation (be it Norway, Sweden, Denmark, or Finland) BUT . . .," and "It is difficult to prophesy, especially concerning the future."

There is generous acknowledgement of the *foreign roots*, "the turn of the century brought new ideas from France and England but Germany had for centuries supplied the bulk of the material and at least in Denmark—styles." There is little sign of anything in the book typographically *barbaric* but the new Vikings do face the fact that "limited typographic material makes for conservatism and strange mixtures in book production"—this is the real *BUT* of being a small nation.

And then the *future*. Dr. Dal has been primarily concerned to get the record of the last 70 years straight and then draw some conclusions for the future. Would these conclusions be different if the authors hadn't started with one foot so heavily in the past? Tradition (Danish, French, or English but mostly just *Tradition*) seems to have tied Scandinavian book designers' shoe laces together and independent progress has been limited, and this is freely admitted, but with the following reservation: "Direct unassimilated adoption of foreign behavior has normally been ridiculed and a more considered and modified reaction regarded a virtue . . . the sharpness of the wave crest has been softened before it brings high tide into Scandinavian waters"—well I think the Danes have an excellent word to describe the result: "hyggelig," which I understand to mean a folksy cosiness.

One accepts that "For book design, traditionalism is not less important than the impulse to find new ways of expression," but only if the traditional is constantly tested: as this book makes it amply clear "historical style" has had little to do with function.

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S V E R I G E S
H I S T O R I A

TILL VÅRA DAGAR

Utgiven av

EMIL HILDEBRAND
OCH

LUDVIG STAVENOR

Talfrå Beren
Oskar Loch Karl XF



Stockholm
P. A. Norstedt & Söners
Förlag

A preliminary page from the Copenhagen Telephone Directory of 1910. Designed by K. V. Englehardt who was primarily an industrial designer.

A 1919 self-conscious pastich of Francophile Swedish classicism of the early nineteenth century; designer Akke Kumlien was trained as an art historian and came to have great influence in Sweden as a book designer and letterer. In the 1940's he wrote that typography is an art that operates through the subconscious.

The world doesn't stay still while deckle-edge devotees fight it out with art-paper innovators. The author makes this point himself towards the end of the book: "such printing [small offset based on self-adjusting typewriters] represents a turnover of \$2 billion in the U.S. . . . There is no reason to make oneself ridiculous by offering resistance. There is a shortage of time, money, and qualified workers everywhere and the forces of book

producing should be saved for purposes where other reasons than tradition demand the traditional art of printing.”

One break in a Scandinavian pattern set principally by other nations was a continuing contribution to book design by architects—especially Danish ones. From the 1930’s they brought an independence to typography that the arts and crafts orientated printers did not have. Just to show that you don’t have to be a very small country to get bogged down, a similar contemporary influence would have been beneficial in Britain!

A printer of very great distinction has said elsewhere that in Denmark, in the 1914–18 War when fortunes were being made by exporters and “the New Rich came into being, the majority of publishers issued . . . the edition de luxe, and the old German type came into vogue. . . . This period in the history of printing is not remembered with pride, on account of the uncritical and somewhat misunderstood copying of the old fashioned typography.” He later made the point that the contrary deprivations of 1940–45 were at least beneficial in reducing Denmark’s reliance on other countries’ typographical inspiration.² What happened in those World War years, Dr. Dal does not say. After the war, with the floodgates open to outside pressure, very little development is discernable in Scandinavian books.

However, here is an eminently thoughtful and thought provoking series of lectures given by Dr. Dal at the University of Illinois in 1967: a unique record of the progress of the Scandinavian book. It starts with the 1890’s; then follows three chapters showing how continental influences were joined by Romantic nationalism, the new typography, and later, neo-classicism. The book ends with “1960: Tradition and Innovation”.

The four parts are set in four different typefaces: Lund Foundry Berling Roman 1952 (“the first 100% Scandinavian typeface” now available in display sizes from Letraset), German Intertype Nordisk Antikva, Monotype Gill, and Monotype Dante.

Colin Banks

1. Esaias Tegner, Swedish poet, born 1782, died 1846.

2. C. Volmer Nordlunde, *60 Years of Danish Printing* (Copenhagen, 1949).

Colin Banks is a partner in the design firm of Banks and Miles (7a Grafton Street, London W1). He received a calligraphic and typographical training in the England of the 1951 Festival of Britain. He is particularly interested in typographical history and has written on various aspects of graphic design and printing.

Résumé de Articles

Traduction: Fernand Baudin

La transcendance du langage et l'esthétique du livre selon Mallarmé.

Par *Gérald L. Bruns*

Mallarmé rêva d'un livre où toute vie serait enclose. Ce qui suppose un langage poétique autonome, à mi-chemin entre l'univers des objets et celui des signes. De l'un à l'autre, le langage quotidien est le truchement ordinaire. Mallarmé s'efforça de libérer la langue poétique de cette fonction de médiatrice. Il voulut en faire réalité distincte en substituant la syntaxe musicale à la place de la syntaxe verbale. En outre, cette syntaxe verbale, il voulut l'exprimer typographiquement: les mots du poème étant disposés sur la page selon un ordre qui évoque celui d'une partition musicale. C'est ainsi que l'univers s'exprimerait dans un livre . . . non pas selon une structure de signes et de significations, mais sous une forme abstraite, comme un système de relations pures. Mallarmé indique la voie vers cet idéal dans *Un coup de dés*. Un simple récit y est exposé, non pas chronologiquement, comme un enchaînement d'épisodes, mais spatialement et typographiquement, sous forme de thèmes exposés simultanément et qui se distinguent surtout par leurs différents corps de caractère. Ainsi la mise en page typographique est élevée au rang de principe de composition et le livre lui-même participe de l'univers poétique.

O ou 0. Par *Dirk Wendt*

Il manque encore une solution esthétique et universellement acceptable, en composition électronique, à l'éternelle question de savoir comment distinguer le O capital du chiffre 0. Les solutions provisoires qui ont mené à l'insuffisance présente, quant à la lisibilité et à la différenciation des deux signes, sont illustrées et commentées. Une nouvelle solution est proposée.

Une solution typographique pour distinguer la lettre O capitale du chiffre Zéro.

Par *Allen G. Vartabedian*

Un nouveau type de caractère est proposé pour résoudre la difficulté en composition mécanique. Il consiste à faire le o rond et le zéro ovale. Cette convention serait utile dans tous les cas où la distinction entre la lettre o et le chiffre zéro est d'importance. Par exemple: sur telex, en composition par ordinateur, sur perforatrices, et en composition par tubes cathodiques. Le nouveau type de caractère ne se réfère à aucune convention antérieure et évite par conséquent la faute qui consiste couramment à sacrifier le o ou le zéro. Un critère est également soumis qui permettrait de faire la distinction entre les o et les zéros dans les fontes existantes.

L'utilité, en bibliographie, de signaler les caractères défectueux. Par *Thomas Tanselle*.

Les défauts typographiques des livres peuvent fournir des données importantes au sujet des procédés d'impression utilisés—tant pour l'analyse de la composition proprement dite que pour déterminer l'ordre des tirages successifs, des éditions, et des états. L'article répond à la question de savoir jusqu'où il convient de pousser la précision dans les collations bibliographiques. Les illustrations montrent les défauts qui peuvent être utilement relevés dans les œuvres de Herman Melville.

La composition automatique selon une méthode inspirée du Report Generator. Par *J. R. Burns*

Le *Master Typography System* est un système de photocomposition ultra-rapide construit pour travailler avec une Linotron 1010 à l'Imprimerie du Gouvernement des E. U. Il est appelé à surmonter les limites que la composition en lignes-blocs impose à la multiplication de données programmées. Le nouveau système est inspiré du *Report Generator* qui s'adresse plus spécialement à la multiplication rapide de données simples et programmées. L'article donne une description et quelques illustrations du nouveau système.

Kurzfassung der Beiträge

Übersetzung: Dirk Wendt

Mallarmé: die Transzendenz der Sprache und die Ästhetik des Buches von *Gerald L. Bruns*.

Mallarmés Traum von einem Buch, in dem alles Seiende enthalten ist, basiert auf der Isolation der Welt der Dinge vom Universum der Bedeutungen in der dichterischen Sprache. Die gewöhnliche Sprache soll zwischen diesen beiden Welten vermitteln, aber Mallarmé versucht, die dichterische Sprache von dieser Vermittler-Funktion zu befreien und sie als Wirklichkeit in ihrer eigenen Welt zu begründen, indem er die Syntax der Musik für die der Sprache einsetzt. Darüber hinaus soll die Syntax der Musik typographisch realisiert werden: die Worte des Gedichtes sollen in dem räumlichen Feld einer weißen Seite so angeordnet werden, daß sie eine musikalische Struktur bilden. So kann die Welt Ausdruck in einem Buch finden—nicht als eine Struktur von Bedeutungen, sondern in abstrakter Form als ein System reiner Relationen. Mallarmé weist auf sein ideales Buch hin in *Un Coup de dés*, in dem eine einfache Erzählung dargeboten wird, nicht als eine zeitliche Folge von Episoden, sondern räumlich und typographisch als ein Parallel-Laufen von Themen, die hauptsächlich durch verschiedene Schriftgrößen unterschieden sind. So wird die Typographie zum Kompositions-Prinzip und das Buch selbst ein Teil des dichterischen Universums.

O oder 0? von *Dirk Wendt*

Bei elektronischen Datenverarbeitungsmaschinen besteht ein Bedürfnis nach einer allgemeinen und ästhetisch befriedigenden Lösung des gegenwärtigen Problems der Unterscheidung zwischen dem Großbuchstaben O und der Ziffer Null. Es wird gezeigt und diskutiert, wie die heutigen Unterscheidungspraktiken zu Mißverständnissen führen können, und eine neue Differenzierungsmöglichkeit zwischen O und Null vorgeschlagen.

Vorschlag eines Schriftschnittes zur graphischen Wiedergabe von O und Null von *Allen G. Vartabedian*

Eine neue Art Schriftschnitt zur Maschinenausgabe der Schriftzeichen für den Buchstaben O und die Ziffer Null wird vorgeschlagen. Sie sieht eine Schleife auf dem O und eine ovale Null vor. Die neue Konvention ist vorgesehen zum Gebrauch in Kommunikationsbereichen, wo es auf die Unterscheidbarkeit dieser beiden graphischen Symbole ankommt und wo beispielsweise Vorrichtungen wie Fernschreiber, Rechenmaschinen-Ausdrucker, Kartenlocher und Kathodenstrahlröhren gebraucht werden. Die neu vorgeschlagene Art Schriftschnitt baut nicht auf frühere Konventionen zur Unterscheidung zwischen diesen Symbolen auf und vermeidet daher den gegenwärtigen Konflikt, ob man entweder das O oder die Null mit einem Strich kennzeichnen soll. Weiterhin wird ein Entwurfsmerkmal vorgeschlagen, um zwischen Ziffern und Buchstaben einer vorhandenen Schrift zu unterscheiden.

Die Ausnutzung von Buchstaben-Beschädigungen als Erkennungszeichen bei der bibliographischen Beschreibung von *G. Thomas Tanselle*

Zufällige Veränderungen in der Typographie von Büchern können wichtige Aufschlüsse über den üblichen Druckvorgang liefern—sowohl bei der Analyse des Schriftsatzes wie in der Klassifizierung und Einordnung von Nachdrucken und späteren Ausgaben. Der Aufsatz untersucht die Frage: In welchem Ausmaß sollen technische Einzelheiten bei der deskriptiven Bibliographie registriert werden? Es werden Beispiele von Vergleichen zwischen verschiedenen Ausgaben der Werke von Herman Melville mithilfe von Buchstaben-Beschädigungen angeführt.

Ein Ansatz zur Herstellung von Berichten mit automatisch gesetzten Seiten von *J. R. Burns*

Weil die praktischen Möglichkeiten der Erzeugung vieler Kopien eines Computer-Ausdruckes mithilfe eines Zeilendruckers beschränkt sind, wurde ein schnell arbeitendes Lichtsetzsystem—das *Master Typography System*—entwickelt, das in Verbindung mit dem Linotron 1010 bei der Druckerei der Regierung der Vereinigten Staaten arbeitet. Das System setzt seitenweise die vom Computer wiederholt ausgegebene Information und benutzt dabei einen Ansatz zur Protokollerzeugung, der für ein begrenztes betroffenes Gebiet bestimmt ist. Das System wird beschrieben und einige typische Ausdrücke werden gezeigt.

The Authors

Gerald L. Bruns is assistant professor of English at Ohio State University (Columbus, Ohio 43210). He was educated at Marquette University and at the University of Virginia. Dr. Bruns is the author of articles shortly to be published in *Modern Language Quarterly* and *The Journal of English Literary History*. The essay published here is from a book in progress on the idea of literary language and the problem of meaning in modern poetry and fiction.

Dirk Wendt (Psychologisches Institute, 2 Hamburg 13, Von-Melle-Park 6, West Germany) received his Ph.D. in psychology at the University of Hamburg where he is teaching and doing research work in the department of psychology. He became interested in typographical problems while working on the editorial staff of a local newspaper, and later extended this interest in a course on applied psychological research. He is a member of the *Journal's* Editorial Board.

Allen G. Vartabedian is a member of the technical staff of Bell Telephone Laboratories (Holmdel, N. J. 07733). He received Bachelor's degrees in science engineering and mathematics from the University of Michigan and a Master's degree in systems engineering and operations research from the University of Pennsylvania. A designer of two fonts, utilizing dot matrix patterns, for alpha-numeric cathode ray tube displays, Mr. Vartabedian's interests lie in the legibility of font styles, graphic displays, and the human performance factors in computer/display communication systems.

G. Thomas Tanselle is associate professor of English at the University of Wisconsin (Madison, Wisc. 53706). Dr. Tanselle's articles frequently appear in bibliographical journals, and he has recently been concerned with the identification of type and the use of type-damage evidence in descriptive bibliographies. He is bibliographical editor of the fifteen-volume *Writings of Herman Melville*, published by the Newberry Library and Northwestern University Press.

James R. Burns (Mergenthaler Linotype Company, Plainview, N.Y. 11803) is manager of Data Processing and directs Mergenthaler's Graphic Systems software development group. Mr. Burns holds a degree in mathematics from Hunter College and has done graduate work in systems science at Brooklyn Polytechnic Institute. He was formerly with IBM and has been involved with third-generation computing equipment since its introduction.

This number of *The Journal of Typographic Research* has been composed in "Monotype" Baskerville types and produced by W. & J. Mackay & Company Ltd., of Chatham, England, on Mellotex high white smooth Cartridge D.Royal g6 with high white matt Ivorex 4 sheet cover. The layout is based on the original design by Jack Stauffacher of the Greenwood Press, San Francisco.