

The Texture of Images: From “Calligramme” to “Fractogram”

Wolfgang Wackernagel

The respectably legitimate offspring of an age-old affair between writing and picture-making, the calligramme – that is, “a poem in which the typographical layout creates a picture, generally related to the ‘subject’ of the text” (*Dictionnaire des littératures*, Larousse) – is often seen as an esoteric minority art of dubious reputation.¹ Starting from an exclusively Western approach to the history of the calligramme, my aim is to demonstrate that this artform may in fact represent something more than simply (here I deliberately use a metaphor from the far east, as a counterargument to my theme) the “Kyogen of the No theatre” – i.e., more than a lightweight interlude between more literary, aesthetic, even metaphysical preoccupations – more elevated, more serious, or, in general terms, more extended. Apart from the play and the pleasure of an approach that is creative in terms of letters and language, it contains serious elements related to the actual exercise of writing in our media civilization.

The calligramme’s poor reputation arises from the fact that examples truly worthy of the genre are extremely rare, difficult, and time-consuming. It is not enough to create a structure and then to pour material into it indiscriminately; in effect, the added constraints imposed by the search for the structure lose their attraction if they do not enter into a dialogue in an original way with the traditional demands of literary value. Because too many creative artists have taken advantage of the apparent structural simplicity of “certain lamentable manifestations of concrete poetry,” the public – except concerning Apollinaire’s agreeable exercise – has hardly been in a position to develop the aesthetic criteria necessary for detailed appreciation of this very distinctive branch of literature.

The argument that follows is a circular one: that is, it both begins and ends with Rabelais, borrowing from this Renaissance figure not only the origins of the present “typographical intoxica-

tion," but also – in order to “sober up” better subsequently – his plain and precise word.

The Sacred Bottle

The calligramme of the Sacred or Divine Bottle (*La Dive Bouteille*), for which the quest had already been proclaimed in the *Tiers Livre*,² occupies an important place within the *Cinquiemesme et Dernier Livre des Faicts et Dicts Héroïques du Bon Pantagruel*: after grandiose scene-setting and preceded by a whole panoply of burlesque rituals – a veritable Bacchic and mystagogic nonsensical jumble – it constitutes the culminating point of this posthumous (and perhaps partly apocryphal?) work of Rabelais. Chapters 34 to 47 consist entirely of Bacchus and bottle, and the thread of the tale may be summarized approximately as follows: arriving on the island of the oracle of the Bottle in the company of a chimera (a lantern), and approaching the temple of the Sacred Bottle, Panurge and his companions meet the “Great Flask,” master of the Sacred Bottle, who, surrounded by his guard of France’s finest bottles, conducts them to the Princess Bacbuc – whose name means “bottle” in Hebrew.³

The said Princess Bacbuc, lady in waiting to the Bottle and mistress of all its mysteries, leads the guests underground down a marble staircase, into what might well be the neck of a bottle, in a state of darkness blacker than in “the pit of Trophonius in Boeotia.” Finally, beneath a doorway adorned with the phrase “in vino veritas,” vast bronze doors open into a temple lit by brandy lanterns and decorated with marvels of every kind, entirely dedicated to the glory of Bacchus. And here too is the fountain of the holy Bottle, whose waters taste of every wine that the drinker might wish to summon to his imagination.⁴

Panurge, who describes himself as “the humble little funnel” desirous of hearing the word of the Bottle, is dressed and powdered as a grand priest of the Bacchic mysteries, before reciting a bottle-shaped “Epileny,” which Bacbuc whispers into his left ear. This is, in fact, the famous calligramme from Chapter 44.⁵ (See Figure 1.)

The oracle of the Bottle could hardly remain unmoved by such a fine invocation – and I suppose that you, dear reader, are as curious as Panurge himself to know the answer. But you must be patient for a little longer, long enough for a modest historical digression on the theme of the calligramme, before we let the Bottle speak, so that *its word* may be the final word of this exposition.

O
Bottle
Brim- full
Of mystery,
With one ear
I hear you :
Do not delay,
Speak but one word
On which my heart depends!
Within the heavenly liquor that
You hold safe wirthin, Bacchus,
Conqueror of Indies, holds all truths
Enclosed, wine so divine, so far
From any form of lies and cheating.
And joyful be old Noah's soul
Who gave us your good grace.
Speak out fine words, I beg,
To relieve me of all misery.
So let no drop of red
Or white be wasted,
While we celebrate,
O bottle
Brim - full
Of mysteries,
With one ear,
I hear you :
Do not delay
[Speak but one word
On which my heart depends!]

Figure 1

Antique Models and Changing Forms

The origins of the calligramme date back at least to the writers of classical times, evoked in Rabelais's *Cinquième Livre*; there is even reason to think that the practice is as old as writing itself. In the West, its first practitioners known by name include Simias of Rhodes (fourth century B.C.), to whom we are indebted for a magnificent "Egg," an "Axe," and two "Wings"; his disciple Theocritus of Syracuse ("Syrinx"), and Dosiadas, Besantinos, and Callimachos. Publius Optatianus Porfyrius created his *Carmina cancellata* in Constantine's era, and from the period between ancient times and the Middle Ages we have the *Carmina figurata* of the Abbot of Fulda (Raban Maur, 780–856).⁶ This list is obviously far from

exhaustive, for, if we wish to look at the phenomenon in a broader sense, according to the Greek designation of “play of art” (*technopaegnia*), covering all kinds of original layout and games with letters or the transcription of phonemes, we would have to draw further on a mass of examples from the Renaissance (Rabelais being only one among many) to the Baroque era, not forgetting – among others – Laurence Sterne in the eighteenth century, Lewis Carroll, and, above all, Mallarmé’s *Coup de dés* in the nineteenth century.

In the twentieth century, the renaissance of the calligramme is indissolubly associated with the influence of Guillaume Apollinaire. We know that for him, interest in the visual qualities of the text was greatly stimulated by close contacts with the most famous artists of the new century: Derain in 1903, Picasso after 1904, and later notably the Delaunays, in a fruitful exchange that culminated in 1913 with the publication of *Peintres cubistes, méditations esthétiques*.⁷ It seems that it is also to this poet and art critic that we owe the epithet *orphism*, used to designate the style of painting derived from cubism, and already implicitly “abstract,” of his friends the Delaunays, Chagall, and certain works of Léger, Duchamp, and Villon. In 1913 Apollinaire published *Alcools* as well as a manifesto of “The Futurist Antitradition.” This latter, sometimes seen as a pastiche of Marinetti’s movement, constitutes a first attempt at visual poetry, following up injunctions such as “pure literature,” “unfettered imagination,” and “words at liberty.” In the autumn of 1913 Blaise Cendrars published his polychrome *Prose du Transsibérien*, with semiabstract illustrations by Sonia Delaunay. The following year an article by Apollinaire acclaimed the “simultaneity” of the poem (“synchronicity” was also a watchword of futurism). He himself was to create the “Lettre-Océan” (the Ocean-Letter), the first “ideogram” of an abundant body of work that included the elegiac “Colombe poignardée et le jet d’eau” and other “poems of peace and war” (1913–1916), while the collection entitled *Calligrammes* was not published until 1918.

Between Mimesis and Abstraction

At the same time the modern theory of abstraction was born, first of all on a conceptual level, thanks notably to the doctoral thesis of a young art historian: *Abstraktion und Einfühlung* by Wilhelm Worringer was sponsored in Berne in 1907 before its publication in

1908 in Munich, where it met with outstanding success, considering its academic style. This work marked a renewal of interest in the predominantly “abstract” historical periods in the art of modern civilization; it very probably contributed to the conceptual search for a purely abstract art, and also impelled the practical development of a style of painting more generally referred to as nonfigurative. It was in fact two years later, in 1910, that Kandinsky created his first abstract watercolor. In 1911, Kandinsky’s *Du spirituel dans l’art*, first drafted in 1909, was published by the same firm as Worringer’s book, before Kandinsky launched himself, with Franz Marc, into the production of the almanac *Der Blaue Reiter*, which was published in 1912, again by Piper in Munich. The passage of time has subsequently confirmed the perceptive choice of contributors: Arp, Cézanne, Delaunay, Gauguin, Heckel, Kirchner, Klee, Kokoschka, Macke, Matisse, Picasso, Rousseau, Schönberg, etc., all names that were to become famous – perhaps the best-known of the period – came together in this almanac.⁸

Apollinaire was invited to the two showings of the *Blaue Reiter*, as appears in a letter from Kandinsky to Franz Marc, dated 14 May 1912, Murnau. In this letter Kandinsky indicated that he expected to send copies of the almanac to Guillaume Apollinaire, among others, as well as to Worringer to thank him “for having written so warmly” on his book (*Über das Geistige in der Kunst*).⁹ In this same year Apollinaire foresaw the birth of a “pure art,” unconnected to any reference to the real, and, as if advancing to meet this tendency, he lost no time in creating his first “ideograms.”

It is, however, also noticeable that the poetic mimesis of the picture is preceded by a pictorial integration of the writing, and before Apollinaire embarked on his experiments with the concrete qualities of writing, he could have seen the introduction of isolated letters or even whole words into pictures after 1911, notably by Braque and Picasso. Once contemporary art had thus released the image from its traditionally figurative function, it is possible to perceive the gap created between a style of relatively mimetic calligramme and a more abstract “iconotexture.” Here we can observe the interweaving paths of craftsmen’s progress in a double renaissance during the twentieth century, a renaissance reflecting apparently conflicting aspirations: nonfiguration in painting and “figurative” poetry in writing – as if writing and painting were seeking to reject and outstrip their own specifics. While the nonfigurative ele-

ments in painting expanded prodigiously, figurative poetry remained a poor relation, with a much smaller audience despite steady growth and numerous experiments.¹⁰

In a marriage of text and form, of abstraction and mimesis, or of typography and metaphor, it is possible to pursue – through all these examples – the wanderings of a style of writing attempting to root itself in the domain of the visual and the tangible, of a word that seeks to become flesh – even while, conversely, throughout all this century, the image played with its own negation in a perpetual leapfrogging toward abstraction, that is, toward a privileged area of literature.

New Writing Technologies

A survey of the recent history of the calligramme shows that an awareness of its possibilities developed swiftly with the break away from the heavy apparatus of printing toward the freely available metallic characters of the typewriter, which, in its turn, helped to relaunch the genre's attraction. Concrete poetry and spatialism made very good use of this machine, either by evading the strict alignment that it imposes (moving the sheet or the roller, superimpositions, etc.), or by turning its linear quality and regulated character spacing into the essence of the exercise.¹¹

It could also be said that writing, engraved or traced with a pen, incarnates an ideal that printing, with its new techniques, seeks to imitate. It can reproduce the compact and eternally attractive form of letters carved in stone, but cursive, italic, or gothic writing is also appreciated. The typewriter, for its part imitates and simultaneously simplifies writing, and we are now entering a new phase, that of thermal, matrix, daisy-wheel, and laser printing, which crown this individuation of typographical characters and offer all kinds of personalized and fantastical scripts. However, it is still possible to go on conforming to the old styles with these new methods, or to develop one's own forms of expression. According to El Lissitzky, "the writer should be required to create his own actual writing, for his ideas reach you through the eye and not through the ear. This is why typographical flexibility should achieve through visual means what the voice and the orator's gestures create for his thoughts."¹² This exhortation from a creator equally versed in painting, architecture, typography, and photography dates from the first half of this century. It becomes much

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His eye beneath
the eyelid was of divine
descent enshadowed by a veiling
of humanity: how much enchantment is
conferred on sight by this shading, this
mantlet on luminosity? Like waves ascending
underneath a setting sun, to the eye's sphere
they open their vaulted dampness, - and embracing
the cherished globe, they marry human-kind with the
awareness of nothingness: the knowledge
of sleep and of mortality - as well as
the taste of prayer to be the rival, of mercy, and
of meditation, though he yet became like the inward vision
and the other's another self: his own blinking glance
or that eye which beloved eye's pupil and which twinkles and
squeezes in its dear friend's true star. corners a tear.
It is the eyes' Down to the very heart of lids also, that
circumvallate the darkness: everything had those expressive
looks of women: he seen, and touched with the flesh which
shades them between bare hands the deathless rather than shawls
clothe their flight - before engraving, which, gives them
a look of Héloïse on brickstone-tablets, as in the case of Kirgizka:
a counterpoise of vestigial remnants of west and east.
Only the snake is of his pristine deprived of lids:
this ravisher of immortality had taken
the plant which stagnates like a thorn. Its
eye without lids is to the secrets of the soul like
a woman without shame to her charm: like a temple
slave, a sacred harlot, a palace of love with
shattered gates. Like a calyx folded in the
maiden's blessing hand, like the foot of
her friend on the temple's threshold
they rest upon the irised ring:
those guardian angels of
the soul's well.

Gilgamesh's Irisglance

Eyeli(e)d = The Song of the Eye:
pixelpoetic calligramme by Wolfgang Wackernagel
(translated by the author, 17 March 1992)

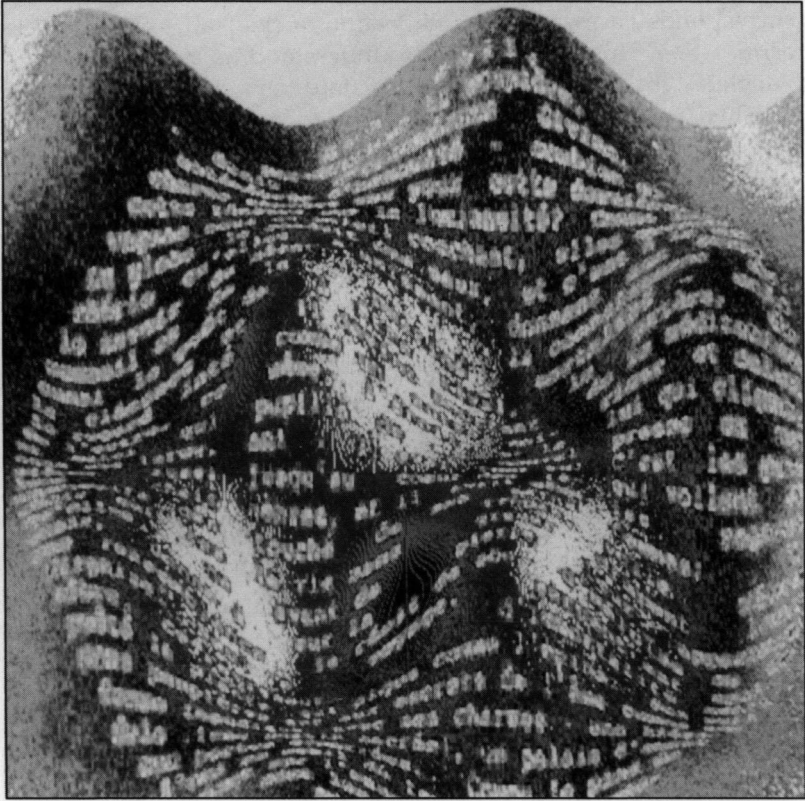
more significant now that the means of manipulating the visual aesthetics of the text are within the reach of all.

At the beginning of the century, writing had not yet undergone an identity crisis comparable to that which the invention and rapid development of photography provoked in painting. Relatively little had changed in the world of printing since the technical typographical innovations of Renaissance printers (such as Aldo Manuci), and in comparison with the world of the image, the manipulation of text by no means achieved the instantaneous quality so characteristic of the photographic image. The typographical obstacle remained, and it was necessary to be a printer or have a typesetter available to publish a book, while in figurative painting, the *raison d'être* of the artist – at least as a straightforward portrait painter – would seem to have been fundamentally challenged by the mimetic superiority of photography.

However, in recent years we have seen a revolution in the practicalities of writing that is at least the equivalent in scale of the revolution in the world of figurative representation unleashed by the introduction of photography, to the extent that, technically, there has been a veritable collapse of typographical barriers. The extent of the phenomenon and the speed of its evolution scarcely leave time to perceive its possible effects on literary creativity.

Just as with photography, where it is first a matter of diaphragm stop, of sensitivity (of the film, not of the photographer) and of shutter speed, we are witnessing in data processing the depoeitization of language in favor of simple technical facticity. However, the subjects surrounding the keyboard – as with those surrounding oxides and fixatives – are a stage on the way to something else. Further, the introduction of new possibilities is always a challenge to known practices. Established values, such as those of the artist or the writer, only exist through an increase of creativity matched by a mastery and integration of these possibilities, or again by a new method of differentiation in relation to these possibilities, as happened with painting when it was faced with photography.

Essentially, if we take the case of data processing, we see that particularly the latest developments allow free access to the creation of calligrammes, a domain hitherto shared between drawing, the traditional typewriter (inconvenient, with limited possibilities, but not entirely devoid of charm), and the heavy apparatus of printing. A new leap forward is therefore foreseeable in this textual discipline, where the visibility and the aesthetics of styles of writ-



Gilgamesh's Irisglance

Polychrome Fractogram by Wolfgang Wackernagel, created in collaboration with
Herbert W. Franke and Horst Helbig
(based on the original French version).

ing fuse with the semantic principles of legibility and the poetry of the word.

Putting a Gloss on Printouts

To the development of the actual concept of the work of art there corresponds necessarily a modification of the status attributed to *vernissage*.¹³ This is traditionally understood as a ritual through which the artistic object acquires its status as a public object and a finished work. In data processing the medium through which a piece of writing or a graphic design becomes a work in the traditional meaning from a hitherto purely conceptual body of data is primarily the printer or equivalent instrument, crystallizing the work conceived as a finished product for a certain given time. Only the copy is finished, while the immaterial model remains modifiable, perfectible or subsequently subject to alteration. Thus it is that a printout, like a camera, stresses the unique temporality of each printout or photograph like an instant of time suspended for posterity. The original, subject to a perpetual future – just like the real world – is perfectible, and renewable as long as life continues. Elsewhere the operation of the varnishing is confused with that of the inking, that is, with the very actualization of the work in its material medium. There is no longer a succession of layers of pigments, oils and fixatives, retouchings and varnish: it should almost be said that the first layer is also the final one.

From an aesthetic point of view, electronic typewriters with small memories, of relatively recent proliferation and yet already somewhat outdated – with their rattling tic-tac and their daisy-wheels spinning furiously across the text like feverish typists desperate to finish their page – constitute the most expressive materialization for an unwonted *vernissage*: they suggest seductive opportunities for the futurist poet “for whom there is nothing more interesting than the movement of the keys of a mechanical piano,” while at the same time perhaps awakening in others a feeling of “disturbing strangeness” (Freud) when faced with the Olympia of the Hoffmann tale, or again something reminiscent of the surrealists’ automatic writing.¹⁴ Yet from a practical point of view, one can already see in these modest examples of the electronic industry – in which the practice of visual poetry still remains a matter of craftsmanship – the considerable influence that these new technologies are beginning to exercise on the practice of writing itself.

Fractograms: The Swan Song of Writing?

The distinctive nature of electronic graphism lies in the concept of the “pixel” (picture element) as a constituent element of the numerized image, as in the composition of different typographical characters – so that for a computer the technicalities of graphism and of setting a text on the screen are derived from the same principle. A calligramme consists of putting this concept into the melting pot, the letters being arranged as macroscopic pixels supplying the form of the text, while the letters of the text, in their turn, make up the “picture elements,” which are, of course, pixels. Thus it is that the electronic calligramme turns into a kind of “pixel-poetry,” in which image and text become increasingly interdependent and even blended. This is all the more true in that the matter of the physical construction of the picture – hitherto fundamental to the very concept of the work of art, and even more so for distinguishing between the original and the copy – is rendered superfluous, since the image is reduced to a package of numerical data. The image has moved into the category of “immaterial” arts,¹⁵ just like writing – the setting, to be reproduced as often as desired, of an abstract substance, the writer’s idea. Finally, image and text attain a degree of abstraction hitherto known only in the world of music, which is itself moreover also affected by the new methods of numerization.

The “fractogram” is a more or less heterogeneous assemblage of Latin and Greek, of Gothic fracture and of advanced technologies, wholly worthy of a “thelematic” study of teratology (referring to Thélème) inspired by Rabelais: *scriptura fracta* consists primarily of an allusion to Mandelbrot’s “fractals”¹⁶ – without claiming the same degree of technological skill, because it is limited to adapting existing installations (and not necessarily the most recent), to a new use, one for which they were not originally conceived. This is not, therefore, a matter of “fractal poetry”¹⁷ in the purely technical meaning of the word, but more a case, by analogy, of a script that is broken – also meaning transfigured – by the data processing imaging systems of the type used to create weather charts and analyze satellite pictures. More generally, the fractogram constitutes a critical metaphor of the dissolution of writing in visual media: in this *Missbrauch*, in the “thelematic” and teratological abuse of systems normally dedicated to the most serious of research programs, in the playful but innocent use of technologies that are sometimes less innocent, writing metamorphoses, like the

woman (but also like Zeus) into a swan, symbol of beauty, of seduction, of the poetic (or numerical) imagination,¹⁸ even of eroticism (Leda) – and like the song of that bird of dreams, it sings, beyond the signs prefiguring the imminence of death, the hymn to the perfection of its transcendent immortality.

Through these transfiguring “fractures” of legibility, the subjective aspect of the visual impression of the text, already inferred by the calligramme, is emphasized and thereby valorized. The visual and subjective impression of the text is detached from discursive reference to the signifier-signified pairing – yet it is important for the observer to have underlying knowledge of this reference and to know that he can always return to it, that he can slide easily from one aspect to another, from contemplation to reading and vice versa; from text to form, then to the image that materializes and takes color at the expense of the text, through the fragmentation and breakdown of this text. In relation to the abstraction that we recognize in painting, this abstraction of the letter in favor of “form” takes the same route as abstract art, but in the opposite direction. It constitutes first a return to the concrete simplicity of the form. The complexity of the calligramme and the richness of meaning that it bears come together in the simplicity of the form, before the “grey” simplicity of the text of which it consists becomes lost, in its turn, in the growing chromatic and formal complexity of the fractogram; that is, in a diversification of optical nuances and shades and in a multidimensional perspective strongly characteristic of the image.

The monstrous nature of these technologies arises notably from the fact that they have often been developed for military purposes. The humanist of the twenty-first century will have as his ideal (utopia?) their conversion to more ecological, contemplative, and spiritual aims – i.e., in this case, aims that are aesthetic and literary: never forgetting the festivity, conviviality, wedding feasts, *savoir-vivre* – and also the humor and sobriety – of the ancients. To start well, but also to conclude, let us like Panurge therefore hold out our “humble and modest funnels,” to hear the word of the Sacred Bottle:

This song concluded, Bacbuc threw I know not what into the fountain and suddenly the water began to boil like the great cauldron of Bourgeuil on high holidays when cross and banner are brought to it. Panurge listened with one ear, in silence, Bacbuc remained kneeling beside him, when from the holy Bottle there came a noise like bees

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emerging from the flesh of a young bull, killed and dressed in the style and spirit of Aristeus, or like a bolt from a crossbow, or a sudden heavy shower of rain in summer. Then they heard this word: TRINCH.

"It is," cried Panurge, "by God's goodness! unless I lie, it is the breaking or cracking, the noise of crystal bottles at home, when they burst by the fire."

The experiment is perhaps more ordinary and mundane than might be thought; there is no need to descend to the bowels of the earth, for nowadays we can hear this music from any bin provided for the recovery of non-deposit glass – *Trinch!* – and this noise is indeed like the German word for the present imperative singular of the verb "to drink" – the word "most celebrated, godliest, most understood by all nations," which will later be interpreted by the priestly Bacbuc-Bottle in person:

The philosophers, preachers and doctors of your world fill your ears with fine words; here we really take in our lessons through the mouth. However I do not tell you: Read this chapter, look at this gloss. I say, Look, taste this chapter, swallow this fine gloss. Once an ancient Prophet of the Judaic nation¹⁹ ate a book and was a priest to his very teeth; now you will consume one and will be a priest to your very liver. Take it, open your mouth wide.

Through this plea for a "concrete" use of writing, one can see a generalized approach to the theory of the calligramme and its derivatives. In effect, Rabelais shows us clearly that this is another way of taking in the text, which might be summarized thus: with wide open eyes one soaks in the form of the text, before adjusting the pupils in order to glean, letter by letter, the velvety feel of the sense.²⁰

Notes

1. This article was presented at Dijon on 1 December 1990 as part of an international colloquium, "The Renaissance or the Invention of an Era" organized by the *Centre de recherche sur l'image, le symbole et le mythe* at the University of Burgundy. The original title is: "Anciens modèles et mutation des formes: de la *Dive Bouteille* de Rabelais à la renaissance du calligramme dans l'électronique."
2. Rabelais, *Œuvres complètes*, Jacques Boulenger and Lucien Scheler, eds., Paris, Gallimard, Bibliothèque de la Pléiade, 1955; *Gargantua and Pantagruel*, J. M. Cohen, trans., London, Penguin, 1955. Cf. the *Tiers Livre* (Book Three), Chapter 47, in which Panurge decides to consult the oracle of the Bottle to learn if he should marry. See also the first chapter of the *Quart Livre* (Book Four), in which he embarks with his companions to find the island of the Bottle.
3. Rabelais, *op. cit.*, 862, n. 1.
4. The description of the Temple and the fountain was inspired by the *Songe de Poliphile* by Francesco Colonna, of which the original edition (1459) is considered one of the masterpieces of Italian Renaissance typography, reissued in 1499 by Aldo Manuci, the celebrated Venetian humanist and typographer. In addition to chapter endings in the form of funnel-shaped bottle-ends, there is a remarkable calligramme in the shape of a vase.
5. It was not until the 1565 edition that the custom developed of setting these lines in the shape of a bottle, Rabelais, *op. cit.*, 881, n. 2. However, the initial "O" in the form of the bottleneck and the length of the lines would seem to indicate this was the author's original intention.
6. See on this topic the very fine work published under the editorship of Michel Perrin: *Raban Maur, De laudibus sanctae crucis* (Praises of the Holy Cross), Paris, Berg International, 1988.
7. Guillaume Apollinaire had the privilege of seeing the famous "Bordel philosophique" in Picasso's studio at the actual time it was being painted in 1907. This picture was renamed more prosaically "The Demoiselles of Avignon" for its first public exhibition in 1916. As an art critic, Apollinaire wrote another article on Picasso in 1905 and one on Matisse in 1907, while from 1910 to 1912 he contributed his ideas to the Berlin review *Der Sturm*.
8. *Der Blaue Reiter*, Wassily Kandinsky, Franz Marc, eds., Munich, Piper, 1912, new edition by Klaus Lankheit, Munich/Zurich, Piper, 1965, 1984; (*The Blaue Reiter Almanac*, Wassily Kandinsky and Franz Marc, eds., New York, Da Capo Press, 1989); Wassily Kandinsky, *Über das Geistige in der Kunst* (first edition: 1911), Berne, Benteli, 1952, French translation by Philippe Sers, ed., *Du spirituel dans l'art et dans la peinture en particulier*, Paris, Denoël, 1989; Wilhelm Worringer, *Abstraktion und Einfühlung*:

- Ein Beitrag zur Stilpsychologie* (first edition: 1908), Munich/Zurich, Piper, 1987. It can be said that Worringer's book is directly concerned with the appearance of abstract art; Kandinsky certainly knew about it through the mediation of the editor whom they shared, since he carried out graphic works for Reinhard Piper from the founding of his business in 1904. Further, five medieval engravings from the *Blue Rider* almanac came from reproductions of another work by Worringer, *Die altdeutsche Buchillustration*, which was published by Piper in 1912, the same year as the *Blaue Reiter* (cf. Klaus Lankheit, ed., 21, 209, 211, 212, 215; and notes, 339, 357). Cf. *Kandinsky und München: Begegnungen und Wandlungen, 1896–1914*, Munich, Prestel, 1982, 45.
9. Wassily Kandinsky, Franz Marc, *Briefwechsel*, Klaus Lankheit, ed., Munich/Zurich, Piper, 1983, 172.
10. This does not enter into value judgements on widely varying productions, on the numerous creative artists and various movements of one "ism" or another during the first four-fifths of this dying twentieth century, from the beginnings of futurism (Khlebnikov, Marinetti), not forgetting subsequent constructivisms and suprematisms (El Lissitzky), pre-manifesto surrealism (André Breton and René Char, the influence of Apollinaire), to concrete poetry (Max Bense, Eugen Gomringer); the Dadaists (Hugo Ball, Tristan Tzara and Kurt Schwitters), the lettrists (Isidore Isou), the spatialists (Pierre Garnier), the "typographical deliriums" and the experimental poetry of the circle of Raymond Queneau and Georges Perec (OULIPO); or again the "unfolding graphisms" and the "calligraphic labyrinths" of Pierre Louÿs and Robert de Montesquiou, which beguiled Colette (*L'Etoile Vesper*); Maurice Roche (*Circus*), Michel Butor (*Illustrations*), Jacques Roubaud (*Trente et un au cube*), Jacques Derrida (*Glas*), Jean d'Ormesson (*Histoire du Juif errant*); or yet again the "animated calligraphy" of Michel Bret and Roger Laufer (*Deux Mots*). All these are routes to explore, the first siftings from a relatively large-meshed net.
11. It seems that this awareness of the graphic possibilities of the type-writer date from a relatively recent period, for in discussing calligrammes in the 1950s and 1960s the Laffont-Bompiani dictionary still referred to a "fantasy" of Apollinaire which "had no future and created no following"; this is inaccurate, as we know. Bordas (1984) quotes Pierre Albert-Birot and Louise de Vilmorin as imitators of Apollinaire. They were, however, generally "sidetracked towards a delicate misrepresentation, . . . , more or less elegant, of the *subject* of the poem," the phrase dying out "in pursuing form at the expense in most cases of legibility," while with Apollinaire the image would be "consubstantial" with the poem.
12. El Lissitzky. From J. Adler and U. Ernst, *Text als Figur: Visuelle Poesie von der Antike bis zur Moderne*, Weinheim, 1987, 261. This catalogue of an exhibition from 1 September 1987 to 17 April 1988 in the famous

- Herzog-August Bibliothek in Wolfenbüttel (where Leibniz and Lessing worked, notably), has an excellent bibliography. Among the latest publications in English: Dick Higgins, *Pattern Poetry: Guide to an Unknown Literature*, Ithaca/New York, 1987.
13. *Vernissage* = varnishing, i.e., adding a gloss – a word with double meaning in both English and French; in the art world it is the name given to the Private View of an exhibition. [translator's note]
 14. Filippo Tommaso Marinetti, "Manifeste technique de la littérature futuriste" of 11 May 1912, in J. Adler and U. Erns, *op. cit.*, 255; E. T. A. Hoffmann, *The Sandman*; S. Freud, *L'inquiétante étrangeté (Das Unheimliche) et autres essais*, Paris, Gallimard, Coll. Folio, 1988. First published in 1919, English: "The 'Uncanny'," *Standard Edition*, vol. 17.
 15. This expression cannot be used without recalling the exhibition of the same name organized on the initiative of François Lyotard. Cf. *Les Immatériaux: manifestation du Centre national d'art et de culture Georges Pompidou, du 28 mars au 15 juillet 1985*. Master work: Centre de création industrielle, Paris, Centre Georges Pompidou, 1985 (exhibition catalog: 1 vol., 1 illustrated portfolio). Cf. also: *Les Immatériaux au Centre Georges Pompidou en 1985: étude de l'événement et de son public*, Christian Carrier, ed., Paris, Expo-Média, 1986.
 16. Benoît B. Mandelbrot, *Les Objets fractals, forme, hasard et dimension*, Paris, Flammarion, 1975; *The Fractal Geometry of Nature*, New York, 1977; P. O. Peitgen, P. H. Richter, *The Beauty of Fractals*, Berlin/New York, Springer, 1986; and *The Science of Fractal Images*, Berlin/New York, Springer, 1988; S. Sarduy and K. Ottman, "Un baroque fractal," *Art Press* dossier 144, February 1990. On the problems relating to data processing, cf. in particular the works of René Berger, *L'effet des changements technologiques*, Lausanne, Favre, 1983; *Jusqu'où ira votre ordinateur?*, Lausanne, Favre, 1987; and *Télévision: Le nouveau Golem*, Lausanne, Iderive, 1991 (cf. also Diogenes, nos. 147 and 152, Paris, Gallimard, 1989 and 1990); Abraham Moles, *Art et Ordinateur*, Paris, Casterman, 1971; H. W. Franke, *Leonardo 2000, Kunst im Zeitalter des Computers*, Frankfurt-am-Main, Suhrkamp, 1987; Jürgen Claus, *Das elektronische Bauhaus*, Zurich, Inferfrom, 1987; Philippe Quéau, *Eloge de la simulation*, Seyssel (France), Champ Vallon, 1986; *Metaxu: théorie de l'art intermédiaire*, 1989; Françoise Holtz-Bonneau, *Lettre, image, ordinateur*, Hermès/I.N.A., 1987; "Spécial Imagerie Scientifique," *Le Courrier du C.N.R.S.*, 66–67–68, Paris, January-June 1987; Edmond Couchot, *Images, de l'optique au numérique*, Paris/London/Lausanne, Hermès, 1988. This is without including the numerous and often highly technical publications produced on the fringe of various colloquia, festivals, and exhibitions of computer-generated images and films: *Siggraph* in the U.S.A., *Ars Electronica* in Linz, *Imagina* in Monte-Carlo, *Computer Animation* in Geneva, *Video Art Festival* in Locarno, *Multi Mediale* at ZKM in Karlsruhe, *Kunsthochschule für Medien* in Cologne, *Centre européen de*

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technoculture (CETECH) of the Paris-Dauphine University, *Forum des Arts et des Nouvelles Technologies* (FAUST) in Toulouse, etc.

17. Cf. "Calligrammes et abstraction," literary review *Ecriture* no. 31, Lausanne, autumn 1988. The *Iris de Gilgamesh* first appeared, without fractogram, in *Cavaliers Seuls*, no. 7, a literary review published with the support of the Activités culturelles of the University of Geneva in 1987 (German version: *Gilgameschs Irisblick* in *Lila Engel: Sphärenpoesie*, Murnau, Amethyst Verlag, 1991). The first fractograms were created in May 1988 at the DLR (Deutsche Forschungsanstalt für Luft- und Raumfahrt) at Oberpfaffenhofen in Bavaria, in collaboration with Herbert W. Franke and Horst Helbig (DIBIAS system).
18. Cf. *L'imaginaire numérique*, Report of the interdisciplinary colloquium, organized by the Ecole d'architecture and the Ecole supérieure des mines at the University of Saint-Etienne, 1986.
19. Ezekiel 3: 3: "And he said unto me, Son of man, cause thy belly to eat, and fill thy bowels with this roll that I give thee. Then I did eat it; and it was in my mouth as honey for sweetness."
20. "Sense" refers to the often and duly quoted *substantifique moelle*, the thick creamy texture of the meaning, as well as to the intuitive powers of the body. So what is this marrow of meaning or sense? The remainder of the text gives us some indications on this point. The Trismegistus Bottle, from which Bacbuc makes Panurge drink, should not in fact be interpreted as an incitement to drink without moderation. Was not Panurge to listen to the oracle of the Bottle with one ear only? Such listening implies measured and critical distancing. Similarly, it was said in chapter 34 that "the priests and all personages who give and dedicate themselves to the contemplation of holy matters should maintain their spirits in tranquility, beyond all perturbation of the sense, more manifest in drunkenness than in any other passion of any nature." (*Op. cit.* 856–57; hence also the "vine shoot" in the slippers and the strange interpretation concerning the apocalyptic virgin: "A woman with the moon beneath her feet; it was, as Bigot explained to me, to signify that she was not of the race or nature of others, who all conversely had the moon on their heads and consequently their minds always lunatic.") Beyond the announcement of his imminent marriage, the "poetic fury" of chapter 46, the madness or enchantment that then took hold of the "skilful and artful" Panurge and his companions (including Pantagruel, who sang an altar-shaped "doggerel"), consisted of nothing less than a symbolic incitement to become intoxicated with science, passing in chapter 47 from the Trismegistus Bottle to Hermes Trismegistus, and thus in sequence from Trismegistus to Trismegistus, and on to the mysterious philosophy of Zoroaster, the "true psychogonia of Plato," the ancient Orphic and Egyptian mysteries, not forgetting Pythagorean mathematics.