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PRESSES UNIVERSITAIRES DE LIÈGE

ISBN : 978-2-87562-165-8



Signatures
(Essais en)
Sémiotique de l'écriture
(Studies in the)
Semiotics of Writing

Dossier dirigé par

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Presses Universitaires de Liège

On scripturology*

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In this contribution we present the principles and parameters of a discipline which remains—in our intended meaning¹—largely yet to be established:² *scripturology*. This discipline concerns the study of different facets of writing, perceived in its generality, as the semiotic apparatus articulating language facts and spatial facts. We refer at the outset to the definition proposed in this volume: “script is a pluricode apparatus having a general usage within a situated human community; its plane of expression is constituted of discrete, combinable units, whose substance can be visual, tactile, or acoustic (but at any rate organised spatially), and its plane of content comprises, among others, combinable linguistic units; these two planes are matched according to socialised rules such that, as much in the reception and the interpretation as much as in the encoding and the production, systematic correlations—stable and intersubjective—can be observed between them.”³

* This paper is a translation by Todd J. Gillen of the original French contribution ‘De la scripturologie’ published in the same issue of *Signata* (pp. 9-56). We are very grateful to Todd for his hard work on this terminologically and conceptually demanding paper; all remaining issues and inconsistencies are ours.

1. Similarly, see Harris (2000, 16): “The rethinking of writing that was already needed in Saussure’s day still remains to be done.”
2. This observation is shared (in particular in the domain of semiotics) and the acts of (re-) founding have proliferated (among others Gelb, 1952; Derrida, 1967; Harris, 1993 & 2000; and Klock-Fontanille 2016a).
3. Cf. Klinkenberg (this volume) with a detailed commentary on the different components of the definition. Certain borderline cases, like the writing of sign languages, are discussed this issue (cf. Boutet *et al.*, this volume).

The term retained for designating this domain of study is a blended compound, forged from the Latin deverbal noun *scriptura* (which refers both to the ‘written thing’ and to the ‘composition’) and from the Greek suffix *-logie* (which performatively establishes the scientific character of the field); this designation indexes, in some way, the hybrid and heterogeneous character of the domain of study⁴ that we bring together and unify under this banner.

This unification comes about first in the point of view adopted. Scripturology is understood as a general theory targeting the establishment of a semiotic typology of writing systems. Its horizon is therefore comparable, within the study of writing, to that of linguistic typology. In order to specify the contours and objectives of such a discipline and to situate our approach, the analogy with the typology of languages will serve us here as an heuristic method.

Just as linguistic typology has distanced itself from the *classification* of the diversity of languages of the world⁵ into major types—analytic, agglutinative, fusional—, it is hardly defensible today to envisage the typology of scripts as a mere classification of the variety of writing systems into large categories such as ‘pictographic’, ‘logographic’, ‘syllabic’, or ‘alphabetic’ (see already Taylor, 1883). These types are often descriptively mismatched,⁶ since they raise to the rank of systems individual functions of constitutive units, and thus do not take account of the necessarily composite character of systems strictly speaking (we shall come back to this issue in §3 below). In addition, these typologies⁷ are generally found paired, consciously or otherwise, with a teleological perspective that envisages writing systems as attempts more or less resulting in or approximations more or less successful in the aim of achieving the alphabetic ideal (Sampson, 2016),⁸

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4. The appellation ‘graphemology’ would surely be too restrictive (to the extent that scripturology goes far beyond the study of graphemes alone; the same observation applies to Daniels’ (2018) ‘graphonomy’ (cf. §2 below), and ‘graphology’ is obviously unavailable. The designation ‘grammatology’ is probably too charged with connotations inherited from Gelb (1952) and Derrida (1967). We are left with ‘scripturology’, even though the term is already used by medievalists to refer to the discipline occupied with the evolution and structures of medieval orthographic systems (the science of *scripta*, cf. Gossen, 1979), and by the communication sciences in the study of ‘scripts’.
 5. See nevertheless Heath (2016, p. 487), who highlights that this remained among the goals of J. Greenberg and that these morphological types have sometimes been replaced by other general criteria, such as the opposition OV vs. VO (Lehmann, 1973), ‘head’ vs. ‘dependent-marking’ (Nichols, 1986), or languages with ergative vs. non-ergative syntax (Dixon, 1979).
 6. Sampson (2015, p. 42): “scripts which have evolved over long periods as the everyday writing systems of whole speech-communities or nations are almost always something of a mixture.” We refer here to the classification of scripts on a continuum between pure phonography and pure logography proposed by DeFrancis & Unger (1994) and Unger & DeFrancis (1995).
 7. An influential typology, resting on the debatable primacy (even universality) of the syllable, is currently that of Daniels (e.g., 2017, 2018), who proposes a classification in five types: (1) logosyllabic, (2) syllabic, (3) abjad, (4) alphabet, (5) abugida.
 8. Sampson (2016, p. 562): “The idea that a logographic script might be a fully-fledged, entirely satisfactory mode of written communication scarcely entered the purview of these scholars.”

according to a fantasized evolutionary continuum (Battestini, 1997, pp. 34-36) that is regularly stained with ethnocentrism⁹ (Yan, 2002). We would easily leave with Hegel the sad judgement that “the alphabetic script is in it and for it the most intelligent” (*apud* Derrida 1967, p. 11) if this position wasn’t still a concern in myriad contexts.¹⁰ Take for example the influential publication of Gelb (1952), which presents the alphabet as the culmination of the evolution of writing systems of the world,¹¹ or the essay of Goody & Watt (1963), who reserve the characterisation ‘literate societies’ for those societies which use alphabetic script (thus excluding those which, like Chinese, have not been able to take advantage, for millennia, of the blessings of this *literacy*). Contributions of this kind have had (and continue to have) a profound and unsettling impact on the entire discipline (Cole & Cole, 2006, p. 305). Scripturology thus does not take as an objective the classification¹² of systems of writing in large sets based on unique and necessarily simplistic criteria.

To continue with the analogy with language typology, scripturology could then be seen as a search for the universals of writing, as with the language universals researched by Greenberg (*e.g.*, 1963) and his school. If the identification of universals¹³ (in particular—but not only—implicational universals¹⁴) indeed forms part of the field of scripturology, then it is important that we should identify their nature. DeFrancis (1989), a specialist in Chinese script, put forward the thesis in his work *Visible Speech: the Diverse Oneness of Writing Systems* according to which all scripts are ultimately subject to a single principle, phonography.¹⁵ This is not the place to refute this thesis,¹⁶ though it is important to note that such a generalisation is either reductive (*i.e.*, scripts do not reduce to this one principle), or trivial (asserting the relations between writing and second articulation of language which is a matter of definition). In other words, if we are on a search for universals, they should be situated on another level of generality.¹⁷

9. On these different points, see Kim (this volume).

10. See the chapter of Harris (2000, pp. 1-16) entitled ‘Writing and civilization’ for a historic panorama and critique of these questions.

11. See, among others, the critique of Daniels (1990).

12. See Joyce & Borgwall (2013) for a practical overview of current classifications for systems of writing.

13. See, for example, Coulmas (2002, p. 151): “[a]ll writing systems incorporate linguistic analysis, and all writing systems are linear.”

14. See Justeson (1976) and Klinkenberg (2005), who suggests hierarchical implications of the type: “*tout signe [scriptural] à fonction intonative a également une valeur démarcative*” or “*tout signe à fonction thématique a également une valeur démarcative.*”

15. He identifies six types, and certain among them can be furnished with the prefix *morpho-*, which corresponds paradoxically with a reintroduction of the logographic.

16. We refer to the debates with Sampson (1994, 2015).

17. A universal such as that presented by Daniels (2017, 2018) of (mono-)syllabic origins for writing is, to say the least, debatable.

In this sense, a motto very current in language typology is ‘what’s where, and why?’ (Bickel, 2007). This question of knowing *what we find, where, and why?* represents a provisional departure from the universalist perspective postulated by the ‘what’s possible?’ in favour of an approach aiming to describe and understand linguistic diversity, in being interested in features more or less widely distributed among the languages of the world. The *World Atlas of Language Structure* (Dryer & Haspelmath, 2013), which aims at collecting and comparing the structural properties (phonological, grammatical, and lexical) of languages, is a famous example of this orientation. To pick up from Planck (2016, p. 463), the objectives of typology become then “(i) to chart linguistic diversity and (ii) to seek out order or even unity in diversity and to make sense of it.” We hold that these two objectives can be transposed to the study of scripts and that only a solid semiotic apparatus will permit us to meet them.

1. Classifying and ordering the diversity

There may nevertheless be some surprise at the transposition of these two orientations to the domain of writing, both because of the qualitative and quantitative differences between the two fields, as much as because of an uneven state of the art between the two domains of study.

From a quantitative and qualitative point of view, as Sampson (2016) has highlighted, while linguistic typology is concerned with hundreds of genetically unrelated languages, there exists only a relatively limited number of scripts, and numerous are those going back to a common ancestor (strictly alphabetic scripts, to cite only one example, all find their roots in the same Semitic ancestor and ultimately derive from Egyptian hieroglyphs by acrophony¹⁸). As for the state of the art, we can estimate that the majority of writing systems are today known and documented—with an abundant bibliography (*e.g.*, Ehlich *et al.*, 1996) of excellent and recent general descriptions of the principle systems of writing (*e.g.*, Coulmas, 2002; Daniels & Bright, 1996; Rogers, 2005; Sampson, 2015) and encyclopedias (*e.g.*, Coulmas, 1996)—, while one of the more urgent tasks in linguistics remains the documentation of the variety of the languages of the world (Himmelfmann, 1998).

That said, to describe the diversity of systems, research their order, and identify unifying principles in a fragmented field, remains an urgent and necessary task in the study of scripts, and it supposes the *possibility of comparison*. It is an acute problem for linguistic typology (Lazard, 1992, 1999, 2005, 2006; Haspelmath, 2010, 2016), where the status of the *tertium comparationis* (‘comparative concept’) is central and never ceases to resurface.¹⁹ To render this task possible within its own

18. See Goldwasser (2006, 2010, 2011, 2012), Colles (2014).

19. A special issue of the revue *Linguistic Typology* (20/2) was dedicated to this topic in 2016.

jurisdiction, scripturology offers a *fundamentally semiotic methodology*,²⁰ with the goal of firmly establishing the terms of analysis and of defining their domain of application,²¹ not being limited to an ancillary vision of writing systems according to which they would simply be a means of transcribing languages.²²

In the following sections, we lay the basis of this semiotic foundation in describing the plurality of its expression planes (§1.1.) and the correlative diversity of the content planes (§1.2.) which characterises to a greater or lesser extent all scripts. After having specified the central role played by the different forms of scriptural syntax (§1.3.), we conclude this introduction in arguing that the multiplicity of the semiosis characterising writing in no way threatens the unity of the field of scripturology.

1.1. *The plurality of expression planes: one stimulus, three signifiers*

We support the distinction that general semiotics makes between stimulus and signifier (Klinkenberg, 1996, with Badir, 1994):²³ the stimulus is the concrete materialisation of the sign, which makes it accessible to the senses, the signifier being the abstract model, of which the stimulus is the hypostasis. Scripturology thus distinguishes the visual facts, independent of their semiotisation—we would conventionally call them ‘graphic objects’—and the graphic signifiers they actualise. It posits that writing renders “*co-présentes dans un énoncé unique des formes relevant d’organisations matérielles distinctes*” (Klinkenberg, 2009, p. 21) and that therefore every stimulus of writing could correspond to (at least) three kinds of distinct signifier.²⁴

20. We refer to the relevant remarks of Watt (1998, pp. 99-100), who notes: “it has to be said that none of the works mentioned [on writing] had recourse to a cogent theory of writing systems, in any serious understanding of the term; not did any much lament the lack of one”, and to his plea for a properly semiotic (and not simply catalogic) approach to writing (Watt, 1998, pp. 117-133).

21. See Weingarten (2013) concerning the ‘graphematic’ dimension of this enterprise, and more widely Neef (2015).

22. See already the brilliant roadmap by Cohen (1958, pp. 433-462) entitled “*Formulaire d’essai pour une étude scientifique de l’écriture*”.

23. This distinction is familiar to the linguist, who would not confound sound and phoneme. In the triadic representation of the sign, which dominates certain American schools of semiotics, and part of the linguistic tradition coming from Ferdinand de Saussure (notably when it is reconsidered by American researchers), what is agreed to call the signifier covers in fact two elements, of which the confusion up until the present has been harmful: the stimulus and the signifier *per se*. (In its recent semiogenetic work, Groupe µ, 2015, renounced the use of *stimulus* in order to avoid synonymy with the trigger process of perceptual mechanisms, which is unfortunate in this context, and it has since spoken of ‘support’ or of ‘material’; there is no reason here to accede to this waiver).

24. To refer to these signifiers, Klock-Fontanille (2016a, p. 12) relies on a Hjelmslevian terminology and speaks of ‘*formants*’ which she defines as ‘*figures du plan de l’expression*’. Given the complexity of the semiotic articulations at play, we prefer to not subsume the different forms of expression to a single term and specify in each case which type of signifier we are dealing with.

1.1.1. *The grapheme* — When the graphic substance is understood as a form of semiotic expression according to a *system of writing*, the minimal signifiers of this system will be *graphemes*. The principles of functioning of every system of writing—understood as the pairing of a script²⁵ and a given language (Weingarten, 2013, pp. 14 & 18)—allow the stabilisation of visual stimuli in distinctive units across the diversity of writing norms. Thus, whether one writes *castle*, CASTLE or *castle*, the second grapheme will be understood as <a>²⁶ and, on the level of content, will be attributed the signification /a:/.

1.1.2. *The grammeme* — When the graphic substance is understood as a form of semiotic expression according to a *writing norm*, the minimal signifiers will be *grammemes*. The norms relevant to each manifestation of the written permit the stabilisation of the visual stimuli in intrinsically spatial grammemic units: between formatting practices and palaeography (including types and, closer still, styles and even individual hands), the grammemic signifiers remain largely to be explored in a scripturological perspective.

Taking into consideration grammemic norms allows the better integration in scripturology of the visual (and beyond that, aesthetic and operative) dimensions of writing and to affirm better the balance between the linguistic and the iconic, which is taken into account by the concept ‘Schriftbildlichkeit’, forged by Krämer²⁷ (2003, 2016).

We can furthermore mobilise here the classic opposition in visual semiotics between iconic (or figurative) and plastic semiotics.²⁸ To put it succinctly, the qualifier ‘iconic’ (or figurative) is employed in relation to a given content when the latter has an equivalent in the natural world (Greimas & Courtés, 1979, p. 146), while the term plastic refers to forms, colours and textures. This distinction is pertinent in scripturology, and it will serve us for studying the functions of grammemes (§4). However the plastic category is probably too general: we will see in effect that it can refer to two families of functions which we will want to distinguish, namely the symbolic and indicial functions.

25. A ‘notation’, in the terminology of Harris (1993, pp. 35-49).

26. In this contribution we follow the usual practice of employing the chevrons for <graphemes> and we introduce the usage of braces for {grammemes} (cf. §4).

27. The introduction of this concept aimed at “*un changement de perspective allant d’une conception de l’écriture orientée sur la langue vers une conception de l’écriture phonétiquement neutre (...). L’écriture n’est plus considérée comme une forme de la langue, mais comme un hybride de langue et d’image. (...) D’autre part, on vise un abandon du caractère absolu du paradigme de l’interprétation et une orientation vers l’esthésie et l’opérativité des écritures. (...) Les écritures ne bifurquent pas soit vers le linguistique, soit vers l’iconique. Au contraire, elles incarnent aussi bien l’une que l’autre*” (Krämer, 2016, pp. 3 & 9-10).

28. This distinction, first theorised by Groupe μ (1979), has since been reworked, with specific inflexions, by the Parisian school of semiotics (cf. Greimas, 1984).

1.1.3. *The scripteme* — When the graphic substance is understood as a form of semiotic expression according to a *practice of writing*, the minimal signifiers will be *scriptemes*. In this context, it is in fact not so important whether the system of writing can be identified or whether the type of script is known: it is the context of actualisation of what is written that matters; thus, a cross handwritten above the sequence <name + surname> at the end of a notarised deed may be recognised as a valid signature, marking the authorization of the individual by their presence in the act of writing, even if their identity is not formally accessible in the scripteme (in other words: even if their name is not in this instance legible as a grapheme).

1.2. *The diversity of content planes*

To each of the signifiers identified above corresponds a distinct content plane²⁹ and, in each of these planes, the signifier is potentially polyfunctional. In other words, each sign of writing is potentially multi-polyfunctional.

1.2.1. *The graphemic functions* — The content plane of graphemes groups together the *graphemic functions*, also called ‘glossic’ in the terminology of Harris (1995).³⁰ By graphemic functions, we understand here not only the fact that the graphemes may be able to refer to units of first (semographic) and second (phonemographic) articulations of language (Coulmas, 1984; Catach, 1994), but also to everything related to the linguistic in the broad sense, depending on whether one is situated in the domain of the lexical, grammatical (subsuming morphology and syntax), or supra-segmental (prosody).

1.2.2. *The grammemic functions* — The content plane of the grammemes groups together the *grammemic functions*.³¹ These semiotic functions are made possible by the inscription of writing in the space and the existence of the norms of writing. These permit the identification of various values that can be easily arranged into

29. For graphic signs, Klock-Fontanille (2016a, p. 14) only recognises a “*signifié linguistique*” and a “*signifié non-linguistique*” or “*idéologique, au sens dumézilien (...). Il s’agit donc de signifiés praxiques, complétant la compréhension du type d’échanges ou d’interaction auxquels le documents renvoie ou appartient.*”

30. Or ‘graphemological’ in the terminology of Catach (1988b). We use here the qualifier ‘glossic’ to refer only to the linguistic functions of graphemes; as will be seen in §3, the content plane of the graphemes is much broader.

31. Cf. Klinkenberg (1996, pp. 170-176, 2005, 2018). Also called ‘non-glossic’ by Harris, but this term built with the privative ‘non’ potentially carries a trace of logocentrism (Klinkenberg, 2006), which too often affects the study of scripts and which we prefer to avoid. Anis groups a part of these functions under the name topograms, defined as “*marqueurs manifestant l’organisation syntagmatique et énonciative de la chaîne graphique (...). Il contribue à la production du sens*” (1988, p. 215). We cannot be satisfied with such a broad definition (since it can be paraphrased by ‘any semiotic expression’) that results in grouping under a single flag the grammemic functions and a part of the graphemic functions.

three families: symbolic values (the use of **Comic Sans MS** in a university work is a guarantee of non-seriousness), indicial values (the nervous handwriting of a letter of complaint points plausibly towards the emotional state of its author) and iconic values (for example the <a> taking the form of a cow's head in the name of the dairy producers of the Belgian Ardennes in Figure 1).



Fig. 1. La bande des FéLait.

1.2.3. *The scriptemic functions* — The content plane of scriptemes groups together the *scriptemic functions* of writing. As Harris has been able to demonstrate in the general context of his integrational semiotics (e.g., 1981, 1993, 1995, 1998a, 1998b, 2000), the functions of a scripteme are always contextually determined and, in this sense, can also be qualified as ‘indexical’ to the extent that only the context permits sense to be made of it. Accordingly, the goal here will be to account for the indexical functions of the scriptemes, which lead to the ‘acts of writing’ (counterpart to the ‘speech acts’ of Austin and Searle; see Fraenkel, 1992) and imply different agents and a particular situation, itself semiotised: the scripteme manifests the integration of any scriptural utterance within a practice. The signature, as a performative act, offers a prototypical example of a plane of expression with several possible scriptemic functions (Fraenkel, 2008, pp. 21-23; Fiserova, this volume).

1.3. *Syntagmatic relations: Scriptural field, chronosyntax and toposyntax*

The syntagmatic relations play a crucial role in the structuring of signifiers, and in the attribution of functions of which they are constituent elements. The value of the units of each family invoked is indeed dictated by these relations. For graphemes, for example, we observe that the value of phonemograms depend on their respective positions (in French, <g> followed by <a> = /g/, but <g> followed by <e> = /ž/) and that, of course, the regulator graphemes (cf. §3.1.2.) can only function in the presence of graphemes that they regulate. For grammemes, a sequence of capitalised characters followed by a sequence of characters in italics can activate the identification of a precise symbolic function such as [bibliographic reference]. As for scriptemes, it is the organised co-presence of the cross and the sequence <name + surname> that makes of it a signature.

It is thus crucial to integrate from the outset the syntactic dimension into scripturology, syntax being defined, in the broad sense given to it by semiotics, as the collection of rules governing the combination and the organisation of units of a system, whether these units are those of the expression plane or content plane. One such definition lets us anticipate that the modalities of existence of syntaxes can be numerous. Thus we will distinguish the syntaxes that arrange the units along a linear axis and those which have in common the association of units in a bi- (or pluri-)dimensional space; syntaxes with explicit marking (such as prepositions and conjunctions in language, or the signs referring to arithmetic operations) and syntaxes with implicit marking (such as relations of coordination, subordination, or superordination in visual icons); systems of loose syntax and systems of constraining syntax. As we shall see below, notably with the opposition between chronosyntaxes and toposyntaxes (§1.3.2.), certain among these distinctions are of central importance for scripturology.

1.3.1. *Syntax and synousia* — But before any distinctions are made, a general remark is needed. In order to establish the interactions that semioticians study under the name of syntax, there is always a relationship of physical co-presence needed—a synousia. Thus if the syntactic homogeneity of a text can be described under the form of morphological phenomena like agreement and semantic phenomena like isotopy, then these phenomena have at least to be perceived as inscribed in a field of perception considered as homogenous and distinct from adjacent spaces. This foundational, yet often forgotten, synousia of syntaxes is particularly important in the case of scripts, since they are inscribed by definition in a multidimensional space.

Research in scripturology has frequently pointed out the role of this synousia, for example in advancing the notion of ‘graphic space’ (Hébrard, 1983). This permits us to apprehend the organisation of writing and to highlight that its inscription in the space produces values bearing meaning that vary with the structure and the statuses of these spaces. We refer to §2 for what we call the ‘scriptural field’, which obeys two sets of rules: rules of demarcation isolating the written portion, and pragmatic rules giving to it its function of scriptural field.

1.3.2. *Chronosyntaxes and toposyntaxes* — This recognition of the role of spaces of inscription, with their specific constraints, brings to the fore another important and quite general distinction: that of chronosyntaxes and toposyntaxes.

In chronosyntaxes, the constituents of utterances are ordered according to a linear sequence, to be scanned in a fixed direction. (And this is why they can be called chronosyntaxes, the line in question being only a spatial projection of time.) Linguistic and musical syntaxes offer good examples of chronosyntaxes. Toposyntaxes, on the other hand, make use of all the spatial relationships able to exist in a plane and even in three dimensions. Here, the values of order and

succession make way for values of simultaneity, and linear scanning makes way for tabular exploration. The syntax of visual iconic signs (cf. Groupe μ , 1992, 2018) is a good example of toposyntax.

Yet it is clear that script obeys these two logics simultaneously. On the one hand, it is inscribed in a space of two (or three) dimensions, of which the perception is simultaneous, but the link that it maintains with language orients and animates this space by linear relations. The particularity of the written space resides thus in this ambivalence: it is the field where tabular and linear relations unfold at the same time.³²

Scripturology has to study how the chronosyntactic and toposyntactic rules fan out in the implementation of different functions of writing. We indeed observe that graphemes predominantly—but not exclusively (see §3.2.1.)—obey chronosyntactic logics, while grammemes and scriptemes tend to be organised according to toposyntactic norms.

Further, one will have to define the syntagmatic rules governing the organization of graphemes, grammemes and scriptemes in formalised, rigorous and generalisable terms. In the example of the signature cited above, we highlighted that the synousia of the cross and the sequence <name + surname> was *organised*: to receive its status of signature, said cross should be both (a) close to the sequence and (b) at a precise location (for example on top of the sequence). The examination of chronosyntaxes and toposyntaxes in documented scripts will thus assumedly cause to appear chronosyntactic universals such as ‘anteriority’, ‘posteriority’, ‘directionality’, ‘freedom of association’, ‘constraint of association’, etc., and toposyntactic universals (perhaps more numerous, given the larger number of implied dimensions, and thus leading possibly to more polysemic expressions) such as ‘juxtaposition’, ‘superativity’, ‘inferativity’, ‘laterality’, ‘subordination’, ‘superordination’, ‘coordination’. We can certainly postulate that these rules can be grouped into families (in the preceding list, the four first terms belong together, as also the three latter).

It is hardly necessary to specify that, in actual fact, the different levels differentiated here are closely interlinked. For example, the study of Balza (this volume) shows that there is in the Hittite culture a close correlation between the options regarding graphemes (cuneiform or hieroglyphs) and the choice of supports, the latter having the status of scripteme since this choice depends in turn on the intended social and pragmatic objectives. This observation is perfectly transferrable to corpuses other than Hittite.³³

32. We refer here to Perri (1999, 2007a-b, 2014a-b), who organises the scriptural facts along a continuum articulated according to two axes: graphic-figurative (diagrammatic pole vs. iconic pole) and graphic-structural (maximal linearity vs. non-linearity).

33. By radicalising linguistic theories of syntax which give to the term a broad meaning that includes the associations between features of meaning, certain semiotic studies assert that meaning is entirely carried by syntagmatic relations (Groupe μ , 2015). Scripturology could indeed bring supplementary arguments in favour of this thesis.

1.4. *Multiplicity of scriptural semiosis and unity of the field of scripturology*

As it appears, the fundamentally semiotic approach advocated by scripturology permits us to study writing and its significations as a whole: the recognition of the fact that a visual stimulus can be the support for several scriptural signifiers, and that these latter are themselves susceptible to multiple forms of signification, allows us to integrate (Klock-Fontanille, 2016a, p. 15) the numerous values conveyed by the scripts of the world. Scripturology enables thus the extension and the systematisation of theoretical options explored by pioneers like Christin (from 1995 to 2012) or Harris (from 1981 to 2000).

This epistemological and methodological unification, in explicitly distinguishing the different forms of signification of the written word (grapheme – graphemic content, grammeme – grammemic content, scripteme – scriptemic content), allows us to propose a precise definition of the terms of analysis which permit the *comparison between systems of writing*.

Only such definitions in fact make possible the identification of regularities, or even of universals, in the field of writing. Let's already point out one of these universals: the necessary grouping together of the three families of units of the expression plane and of the three families of functions. If we can rightly differentiate them, there is no writing system, in the manner in which we have defined this semiotic, which does not mobilise all of them. In other words, every writing system presents by definition a coordinated set of graphemic, grammemic, and scriptemic functions. The originality of a particular system of writing will reside thus (a) in the choice which it makes in the three types of signifiers and the three families of functions, (b) in the rules of actualisation of units of expression and of content of each of the chosen types, and (c) in the ways in which it articulates the chosen techniques within each of the chosen types.

Scripturology, defined in these terms, that is to say as a *theory permitting the establishment of a semiotic typology of scripts*, is committed to the following domains: that of the materiality of the written, first, which ensues from the recognition of a unique visual stimulus within a scriptural field (§2); that of syntagmatic organization and of functions of graphemic units (§3) and grammemic units (§4); and finally that of scriptemic functions and associated acts of writing (§5).

2. Support, scriptural field, and modes of writing

The object-support and the scriptural field which emerges from it are phenomenologically primary, both in production (beginning from the blank page or inert block of stone) and in reception. An enunciative perspective is thus indicated:

each written production or reception relies on a process of appropriation of space (which incidentally is not peculiar to writing).³⁴

Scripturology thus is interested in dealing with these—most often discussed with anthropological, sociological or historical instruments—in properly semiotic terms, by studying the mechanisms constituting a portion of the space of the support in a scriptural field homogenous and distinct from adjacent spaces. Whether we are dealing with a page of a book or a stela bearing an inscription, a double game of rules is at play, which concern firstly the demarcation of one sector of global visible space, in such a way as to isolate this sector and give to it a dominant semiotic impact (barysemia, or semiotic densification of the central zone), and secondly the semantisation, or attribution of a particular cultural status to the sector segregated in this way.

These two operations, demarcation and semantisation, are made possible by the perception of factors that we will call *indexical*, which enable the attention of subjects to be captured vis-à-vis the segregated space.

The process of demarcation is based on a fundamental property of all visual utterances, which derives from the same mechanisms of perception: that of making a partition, both in the field of what is able to be perceived by the senses as well as in that of the intelligible; this is what produces the paradigms of units belonging to the expression plane as well as those of the content plane. This partition goes together with a differentiation. In terms of space, this differentiation designates a central space and a peripheral space, separated by a kind of bounding wall (which can be fictional), namely an opposition inside *vs.* outside. These contrasts permit us to identify the margins of a page or of a kakemono as standing out from their surroundings, and to consider the space they delimit as homogenous, such as the contours of a stela in space, the luminous surface of a screen, or the edges of a label. It should be noted (1) that these contrasts can vary according to diverse parameters, of which certain are culturally stratified and (2) that the central and peripheral spaces can be separated by a materialised boundary. Such materialisations reinforcing the separating function are for example the feature framing a digital screen, or the register of an inscription. Finally, (3) these spaces—whether structured by explicit marks or not—can fit together in a concentric manner (the speech bubble within the box, the box within the page, the page within the comic book; the feature in the quadrat block, the quadrat block in the vertical line; the line in the Chinese dazi-bao banner).

Such demarcation marks are signs of the family of the index, which will be studied more thoroughly in §5 below. Based on a semiotisation of the space, the

34. See in this sense the concepts of '*objets-écriture*' and of '*interface*' proposed by Zinna (2004). The first intends to take account of the fundamental material and contextual dimensions of texts, while the second refers to relations between subjects, between objects, and between subjects and objects. For a plea in favour of an enunciative approach to writing, see for example Klock-Fontanille (2014, pp. 29-32).

indexation has a double functionality: (1) a general function of focalisation of the attention, and (2) specific functions of semantisation consisting in giving a particular status to the combination [scriptural field + written utterance], thus reinforcing the formatting of the segmentation: in a certain space, the inscription will have a sacred value; in another it will have a juridical value; or the written utterance will consist in identifying the status of one of the uniting sets (book, identified by the title on the cover, edifice identified by the inscription on its facade, person by their badge, or an inlay on a screen, etc.).

The two material elements implied in a written utterance—the substrate (or object-support with its scriptural field)³⁵ and the material form³⁶ of the script—contribute together to the constitution of the stimuli of the graphemes, grammemes and scriptemes. If we want in addition to take account of the act of utterance—in other words the process of production and reception of the scriptural utterance and the situations of writing—we note that their belonging together engages a third factor: the instrument of its production (or of its reception). The paper is thus frequently correlated with the pen, the stamp or the brush, the stone or wood with the chisel, while electrical impulses determine the orientation of liquid crystals of a screen.³⁷ Each of these tools implies a specific mode of inscription (potentially combined)—subtraction (*e.g.*, engraving), addition (*e.g.*, painting), etc.—, which is also semiotised (the monumental Egyptian reliefs are for example sacralised notably by their mode of inscription). Scripturology will thus include a study of the materiality of the written and of its significations in context: supports and scriptural fields as well as materials and modes of inscription are fundamental in any semiotic approach to writing.

3. The grapheme and graphemic functions

Now we turn to the most obvious form of stabilisation of the scriptural stimulus in a form of semiotic expression, namely the graphemic signifier. Each system of writing, by definition paired to a linguistic system (§1.1.1.), is composed of minimal units of which the content plane consists of linguistic units (in the broad sense described in §1.2.1.). The term ‘grapheme’ is generally employed to refer to these signifiers, which are commonly called ‘letters’ in our alphabetic cultures or ‘characters’ under the influence of printing practices (and ‘graphem(at)ics’ is the name given to this domain of study of scripturology).

35. See Arabyan & Klock-Fontanille (2005), Mitropoulou & Pignier (2014). For the distinction between the material and formal dimensions of support, see Fontanille (2005).

36. For example the association of a pigment and a binding agent, or the groove in the case of an engraving on rock, etc.

37. On the passage from graphic materiality to numeric materiality, see De Angelis (this volume).

The term ‘grapheme’ has been understood and used in two distinct ways in relation with ‘phoneme’ on the model of which it is formed:³⁸ referentially, where the grapheme is understood as the written realisation of a phoneme (<f> and <ph> are then allographs of the same grapheme in French to the extent that they both have /f/ as their content plane); and by analogy, where the graphemes are seen as minimal contrastive units of a system of writing, *i.e.*, as abstract signifiers identified by commutation (Coulmas, 1996, pp. 174-175). The arguments against the first definition, too obviously linked to a phonographist or representationalist conception of writing, shouldn’t detain us here. Although the analogy between graphemes and phonemes has certain limitations (Korth, 1985, 1986) and poses difficulties that some have judged insurmountable (Daniels, 1991, 1994, 2017, p. 88), it is the second avenue that appeals to us (Pulgram, 1951; Anis, 1983; Pellat, 1988; Herrick, 1994a, 1994b; Sampson 2015, pp. 15-16).

Nevertheless the analogy has its limits, notably because graphemes, in difference to phonemes, are (1) combinable to form complex graphemes (*e.g.*, <p> and <h> for <ph> in French; cf. Weingarten, 2013, p. 19) and (2) even if they are distinctive units on the visual plane, they also possess a potentially complex content plane that must be taken into account (to take up an old formula, they are the signs of signs). Consequently, in a given system of writing, the identification of a grapheme (for example <a>) should rest on the recognition of visual classes of allographs³⁹ (for example the grammemes |a|, |A|, or |a|)⁴⁰ contextually associated to the same linguistic content plane (for example /a/); in other words, the graphemes should be defined both visually and relationally (Meletis, 2017).

In a first approximation, one can suggest that the content plane of graphemes is a meaningful unit of the first articulation of language (the class of semograms, or pleremes in the Hjelmslevian tradition),⁴¹ a distinctive unit of second articulation (the class of phonograms, or kenemes in the Hjelmslevian tradition) or a unit combining the two dimensions.⁴² Table 1 below constitutes a first sketch of the basic functions of graphemes (systematised in §3.2. below) and illustrates these three possibilities, proposing a term for each:

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38. See in this sense the term ‘chereme’ forged by Stokoe for describing the minimal units of sign languages.
39. In our conception, allography does not depend on reference to the same phoneme (see already Bazell, 1956 and the discussion in Lockwood, 2009). In other words, <f> and <ph> will not be considered as allographs in French based on <foto> vs. <photo> = /fɔtɔ/.
40. Certain allographs are in complementary distribution in a given system of writing (for example, in Arabic where the initial, medial and final position determines the allograph used; in our Western Latin scripts, upper case at the beginning of a sentence is another example; or even the alternation between <σ> and <ς> in Greek, the latter being reserved for final position before a typographic space between two words, while others are in free variation, such as <a> vs. <ɑ> in French.
41. See, *e.g.*, Haas (1983), Coulmas (1989, p. 49).
42. In this sense, see for example the remarks of Coulmas (1984) and Catach (1994).

+SEMOGRAPHIC		-SEMOGRAPHIC
<i>Ideogram</i>	<i>Morphogram</i>	<i>Phonogram</i>
-PHONOGRAPHIC	+PHONOGRAPHIC	

Table 1. Basic functions of graphemes: first sketch.

This presentation offers the advantage of objectifying the definition of notoriously polysemic (and problematic) terms in the literature on systems of writing (e.g., Harris, 2000, pp. 138-160; Jaffré, 2001):

- An *ideogram* refers to content [+SEMOGRAPHIC] without being strictly associated with a particular pronunciation in a given system of writing⁴³ [-PHONOGRAPHIC]. In the category of ideograms, *pictograms* are probably the easiest to grasp⁴⁴ (see §3.1.). The pictogram <☕>, for example, which refers loosely to the content [hot drink] in the semiotics of emoticons, could be verbalised in different ways depending on the enunciative context—for example, “I’m finishing my ☕ (‘cup of coffee’)”, “my ☕ (‘tea’) is cold”, “always more cocoa in my ☕ (‘hot chocolate’)”, etc.—but is not associated in a unique way to a lexical item and to the relevant phonemic realisation. This versatility allows this kind of semogram to be shared easily between systems of writing (and some pictograms can be stabilised as logograms, that is to say associated in a unique way with a given lexeme). Here we touch on the ever recurring universalist quest of pure semography (e.g., Coulmas, 2002, pp. 23-26), which seeks to liberate itself from particular languages in referring directly to shared signifieds. Famous names like Francis Bacon or Gottfried W. Leibniz have believed in this ideal, and the *Begriffsschrift* of Frege or the *International Picture Language* of Otto Neurath are part of this quest,⁴⁵ of which a recent avatar is *Book from the Ground* by Xu Bing (2013)⁴⁶ (Figure 2). Even if a system of writing *cannot*, given the definition selected here,⁴⁷ be constituted exclusively of ideograms, they nevertheless play an important role both diachronically

43. See, e.g., Stetter (2002). This term was notoriously used by Champollion who initially thought that certain Egyptian hieroglyphs were not pronounced, but referred uniquely to an ‘idea’ or ‘concept’.

44. On the semiotics of pictograms, see Vaillant (1999).

45. See in this sense the system called ‘Blissymbols’, developed by Charles K. Bliss, which is perhaps the ideographic system which comes the closest to a complete system of communication (cf. Sampson, 2015, pp. 21-23).


46. See Borysevich (2014) concerning the genesis and the realisation of the project.

47. We have already made reference to the prehistoric ‘mythographs’ of Leroi-Gourhan (1964). For an introduction, see Cohen (1958, pp. 27-33). On African ideographic systems, see for example Battestini (1997, 2006); for native American cultures, see e.g. Severi (1994, 2003). As Winand (this volume) has highlighted, the historic interpreters of writing, such as A. Kircher with Egyptian hieroglyphs, have sometimes transformed these latter into ideographs, where each sign is to be glossed depending on a supposed symbolic value.

(given the place of semography in the creation of systems of writing) as well as synchronically (where we see the regular reintroduction of icons in the graphemic field). Furthermore, as the example in Figure 2 illustrates, one could paraphrase the sequence with “while Mr Black was walking in the street, he wondered what he could get Mr White for his 30th birthday and for Mr and Mrs Purple for their wedding”; the ideographic systems permit, even call for, a verbalisation, but—unlike morphograms—do not constrain it.



Fig. 2. Extract from Xu (2013, p. 41).

- A *morphogram* is in contrast a grapheme that refers both to a particular content [+SEMOGRAPHIC] and to a specific phonological realisation [+PHONOGRAPHIC]. *Logograms* constitute a particular category of morphogram: they refer to lexemes (e.g., 日 *rì* ‘sun, day’ in Chinese); they are autonomous to the extent that they refer to lexical morphemes. But other units on the content plane can be denoted by morphograms, such as roots in Hamito-Semitic languages, and we must then talk of *radicograms* (in hieroglyphic Egyptian, the sign of the scribal equipment  [Y3], for example, is associated with the root *sš* [WRITE] and appears in the writing of terms like *sš* ‘to write’, *sš.w* ‘(a) writing’ and *sš.w* ‘scribe’,⁴⁸ or more broadly grammatical morphemes, which can be designated as *morphemograms*⁴⁹ (for example the morphemogram of nominalisation –IS in Mayan writing; cf. Coe & Van Stone, 2005, pp. 22-24). A characteristic which enters often in the definition of morphograms is the fact that the reading is not transparent: it cannot be inferred directly from the grapheme used⁵⁰ (which prompts the regular joint use of phonograms indicating the reading to adopt, often called ‘phonetic complements’ in virtue of their function),⁵¹ but this clearly does not imply that a particular phonological realisation may not be linked to the contextual use of morphograms in a system of writing: the units

48. Cf. Polis (this volume).

49. The morphemogram is thus a member of the category of morphograms, just as the phonemogram is a member of the larger category of phonograms (see Table 2 below for the whole set of terminology chosen).

50. See for example the definition of ‘logogram’ proposed by Unger & DeFrancis (1995, p. 50): “A *logogram* is a unit of writing that stands for a morphophonemically definable string (its reading) that cannot be inferred by inspection; e.g., the symbol <&> used in an English text for the word *and*.”

51. What we call below ‘regulator graphemes’ (cf. §3.1.2.).

of the content plane are inseparably linked to units of second articulation in a linguistic system. One can think here of the two ways of reading kanjis of Chinese origin in Japanese: they can have *on*-readings (retaining the Chinese reading) and *kun*-readings (adopting the Japanese reading). It goes without saying that a morphogram, like all morphemes, can be realised segmentally by a zero (\emptyset), such as <nt> in <ils arrivent> in French.

- A *phonogram* refers (with greater or lesser precision depending on the system of writing) to a phonological realisation [+PHONOGRAPHIC], but does not correspond to a unit of first articulation [-SEMOGRAPHIC]. A grapheme used as a phonogram can thus express one or many segmental units (<c> for /k/ in the English <cat>; Ꞗ [T25] for the consonantal sequence /dbʒ/ in hieroglyphic Egyptian)⁵² or suprasegmental units (such as the interrogative intoneme indicated by the question mark <?>, or the syllables marked by a high dot, called ‘tsek’, in Tibetan). The segmental units are not uniquely phonemes, but can also be distinctive features (or phemes), like nasalisation, palatalisation, change of aperture, etc. The length of a consonantal phoneme can also be indicated by the doubling (gemination) of a grapheme—a productive principle in Finnish orthography, which we find in myriad other systems (cf. Greek <μέλω> /mélo:/ vs. <μέλλω> /mél:ɔ:/)—, by ligature, or by placement of a diacritic—cf. the use of the shadda <˘> in Arabic (cf. Weingarten, 2013). The universalist ideal of a one-to-one relation between grapheme and phoneme (Coulmas, 2002, pp. 26-33)—which is the counterpart of pure semography (cf. above), sought notably via the international phonetic alphabet with its well-known difficulties (see MacMahon, 1996; Neef, 2015, pp. 714-715), via the ‘alphabetic’ of Jespersen (1889), and perhaps even via Martinet’s alfonc notation—does not apply to historic writing systems. Only the creation of a new system of writing in a civilisation of the written word can be more or less successful in achieving this ideal (and only for a certain time), such as Korean hangul,⁵³ where consonantal graphemes refer diagrammatically to their point of articulation (cf. below). In the systems of writing which have emerged historically, the norm is towards polygraphy and polyphony:⁵⁴ polygraphy when many phonograms correspond to the same phoneme (<y> and <i> for /i/ in <polygraphic>, or the digraph <au> and the trigraph <eau> for /ɔ/⁵⁵

52. Typological studies often reduce (see Jaffré, 2001, pp. 539-540), in their generalising perspective, ‘phonographs’ to alphabets or syllabaries. The example of Egyptian cited in the text, with a grapheme expressing three consonantal radicals, shows that this perspective is reductive.

53. On hangul, see Sampson (2015, chap. 8) and the nuanced observations of Coulmas (2002, p. 165).

54. See Rilly (2010, pp. 221-223), who speaks of ‘polyvalence’ and not of ‘polyphony’.

55. In a recent show entitled *La Convivialité* at the Théâtre National (Belgium; 2016), the authors Arnaud Hoedt and Jérôme Piron (2017) developed an algorithm that generates all possible spellings for any given sequence of French language; thus /krefisjð/ can be written 240 ways (Hoedt & Piron, 2017, pp. 26-27).

in French), polyphony when a phonogram corresponds to many phonemes (<ch> for /tʃ/ in <chat> and for /k/ in <chaos>, or the sequence <read> which can be read /iɪd/ or /ɪɛd/).⁵⁶

The terms discussed above—pictogram, logogram, radicogram, morphogram, phonogram, etc.—are not properties of individual graphemes and even less of graphemic systems (even if many still speak of ‘logographic systems’), but rather of contextually determined functions. In other words, one grapheme can be used in various functions (for example, a single Japanese kanji can be employed sometimes as a logogram, sometimes as a phonogram) and furthermore can have several values for the same function (for example, the readings *on* and *kun* for the same kanji used logographically).

Finally, it should be stressed that the graphemic functions cover the entirety of the linguistic domain—from phonology and morphology, via semantics, to prosody and pragmatics (just think of the use of the set of dots <...> or more recently of the emoticons translating the mood of the writer)—but, as we will see below, go well beyond the borders of the linguistic realm.

3.1. *Writing as analysis of language and of the world*

As it has graphemic functions, writing produces an image—or better: an analysis—of language (cf. Marazzi, 2012⁶ and Cárdenas, this volume). It is, as Benveniste (2012, p. 113) proclaimed, “*l’instrument et la manifestation du procès de l’auto-sémiotisation de la langue*”.⁵⁷ In that sense, along with the myth, persistent since the ancients, of a perfect language absolutely apt to the real, reigns the myth of writing as a perfect mirror of language. A myth according to which writing ‘records language’. But what is true of every sign—it furnishes a structuring of content planes and expression planes and, ultimately, categorises the world of experience—is also true for graphemic signs: they furnish a necessarily biased and incomplete analysis of languages. If writing is an icon of language, it is (like every icon) produced by fixed and systematic transformations (cf. Groupe μ, 2018). It is what Krämer (2016, p. 5) summarises in the following manner: “*Le graphisme [i.e., de l’écriture] fournit une cartographie de la langue.*”

In this process of analysis, every writing system makes strategic choices. The originality of a particular system resides thus in the choices which it makes relative (1) to the functions which it manifests and to the distribution of these functions, (2) to the degree of abstraction of the analysis, as well as (3) to its level of discrimination and explicitation.

56. Rogers (2005, pp. 16-17) speaks of homophonic heterography in the first case and of heterophonic homography in the second.

57. See the contributions of Fenoglio *et al.* (2016) for a reflection on Benveniste’s thought concerning writing.

- *Type and distribution.* We can probably suppose that certain functions of graphemes are shared universally, since they participate in the very essence of systems of writing. Thus, even if the phonographic dimension predominates in certain systems (we are thinking of the *scriptio continua* of Greek inscriptions which hardly leaves room for semography) and if the semographic dimension tends to prevail in others (a striking case is that of linear Proto-Elamite, the decipherment of which has been difficult precisely due to the absence of graphemes with phonographic function), all systems of writing possess to a greater or lesser extent graphemes capable of filling these two families of functions: Charles Bally was an ardent promoter of the logographic dimension in French, and the work of Jaffré on its orthography also goes in this direction. In contrast, certain specific functions at the heart of these families are not shared universally: in the category of semograms, classifiers (§3.1.1.), for example, only appear in a limited number of writing systems, and in the category of phonograms, phonetic complements (§3.1.2.) are not employed everywhere.
- *Abstraction.* If certain historians of writing have celebrated the progress that in their eyes was the alphabetic model, it is without doubt because it appeared as the expression of a very abstract analysis: that which succeeded, from the representation of lexemes by logograms to the analysis of language in phonemes, with the intermediate level of the syllable, which is less abstract than the phoneme, and thus easier to identify.⁵⁸ We note, paradoxically from this point of view, that it is writing, via the graphemic analysis it produces, which has steered the notion of the phoneme (in particular in alphabetic cultures), and not the inverse (see already Ludtke, 1969). It is at this point that writing systems can appear revolutionary: ahead of linguistic analysis, they permitted it. And not only the phonological level is affected: the use of upper case for substantives in German, for example, indicates an analysis according to parts of speech.
- *Discrimination and explicitation.* We know for example that the majority of systems of writing recording (Hamito-)Semitic languages, from ancient Egyptian to Arabic to Hebrew, only record consonants; when there is need and in specific contexts, this notation can nevertheless be supplemented by (frequently diacritic) graphemes which refer to vowels. Likewise, new letters can appear in a phonographic system to realise phonological oppositions that have yet to be marked: this explains the distinction between <j> and <i>, or between <u> and <v> in French. Finally, every student of ancient languages has encountered Greek texts that vary in accents or breathings.

58. In particular for children. According to Jaffré, syllabic scripts have thus a better chance of being more quickly understood: “*au Japon, la plupart des enfants de 5 ans [sont] capables de lire les hiragana cinq mois avant d’entrer à l’école [,] et d’en écrire un nombre non négligeable*” (2007, p. 32).

These differences of discrimination *intra* and *inter*-systems are equally valid for the suprasegmental domain. Certain signs of punctuation of Latin writing, such as exclamation and question marks, record functions of intonation. But this system of notation is fairly crude: it only takes account of specific values of intonation. One can think here of the linguists studying oral corpuses who have to invent new signs for rendering more discriminant the notation of these values. The same remark applies to demarcative signs: the spaces between words, for example, have appeared at a certain moment in history, but can disappear in certain circumstances; in contrast, more detailed signs of demarcation, such as those featuring in the formatting tools of word processing (indentation, beginning of the paragraph, end of the line, or spaces between words), can pass from a specialised usage (typography) to a shared usage.⁵⁹

There can be no question of discussing whether the analyses of language that scripts propose are scientific or if we are dealing with folk categorisations which would be necessarily 'false'. Rather, we can resort here to an opposition familiar to anthropologists: *etic vs. emic*. Alongside the *etic* perspective, which sees grammars as autonomous objects, the *emic* perspective sees semiotic behaviours in connection with their cultural context; it takes into consideration the functions the users themselves attribute to their semiotic practices and are based on the study of representations which they make of them. Writing is principally an *emic* analysis of language,⁶⁰ even if it has supported and encouraged, in the course of history, *etic* approaches to language.

Although different, the *etic* and *emic* approaches have in common the consideration of these analyses as a semiotic practice. But they have a second point

59. Word processors allow hidden marks to appear which indicate typographic devices, thus producing a redundancy with respect to the signifiers which already convey the typographic disposition itself. This elevation of the rate of redundancy without any doubt produces an important effect on awareness. But the example of typographic signs is only one particular case of a more general phenomenon: the fact that new technologies make explicit their own rules of use with diverse meta-semiotic devices: headings or help balloons, options menus, toolkits in the margins, all instruments that one finds in addition to the drop-down menus. These devices all function to provide commentary on the utterances or to permit users to produce them. Yet they are always manifested simultaneously with the utterances which they allow to be elaborated. To take a comparison, it is as if the roles of syntax were made explicit *simultaneous to* the production of each phrase. A thing which may be impossible to conceive, since a phrase is linear: the utterance of the rule which permits its production must necessarily either precede or follow it (as is the case in grammars). If in hypertext the rules can be manifested simultaneous to the utterance, it is due to a basic characteristic of writing: its spatiality, a spatiality which authorises simultaneity. This expansion of meta-semiotic discourse is without doubt not the least of the evolutions which have provoked the fertilisation of scriptural practices via these new technologies.

60. The analyses discussed here remain for the most part explicit (which squares well with their *emic* character). But it is not an absolute rule; what it shows is the impact of new technologies on writing practices (cf. n. 59 and Klinkenberg, 2012).

in common: that of giving a character of necessity to the image elaborated. It is what is produced with the cartography of language provided by writing: the analyses we are concerned with here confer to language a certain stability, immunising it from many types of variation. One has many times (and in a manner both intelligent and pleasant with Raymond Queneau, 1965) insisted on the conservative character of writing systems, which sometimes goes as far as eliciting diachronic steps backwards.⁶¹

Finally, we note that these analyses have sometimes had important impacts on the global organisation of meaning, of action, and of knowledge. We recall the remarks of Goody (1979, p. 75): “[*l*es formes non syntactiques [actually ‘non-chronosyntactic’, since reference is made to a toposyntax here] *qui interviennent dans la tenue des livres, ont eu une action en retour sur d’autres utilisations du langage et peut-être sur le langage lui-même.*” There is no doubt that these meta-semantic productions have been able to have such an effect, and not only on language, but also on the transformation of the world that language permits.

3.1.1. *The meta-glossic functions: categorisation by classifiers* — In this respect, a particular function of graphemes merits to be discussed further: that of ‘classifiers’ (also known by the name ‘determinatives’, ‘semantic radicals’, or ‘semantic complements’). Here we are dealing with a particular kind of ideogram [+SEMOGRAPHIC & –PHONOGRAPHIC] which (in contrast to pictograms discussed above) are not autonomous on the graphemic level [–AUTONOMOUS], but signal membership to a particular semantic class or category of a linguistic unit (a lexeme or even an entire syntagm) expressed by adjacent graphemes, graphemes which precede (as with Egyptian hieroglyphs) or follow the classifier (as is generally the case with Sumerian cuneiform, cf. Selz *et al.*, 2017). The categorisation made by the classifiers is not properly linguistic, to the extent that it corresponds to no segmental realisation [–PHONOGRAPHIQUE]: we are dealing with morphemes of the written word (Linke & Kammerzell, 2012), which propose a categorisation of the world and of experience relevant to each writing system (*e.g.*, Goldwasser, 2002).

This categorisation can be relatively abstract (or can become so diachronically). In Chinese, for instance, the grapheme 木, which can be used as a classifier with the general meaning ‘tree/wood’, appears in the compound characters 枝 *zhī* ‘branch’ and 根 *gēn* ‘root’, where the classification is relatively transparent; but it also appears in the terms 橋 *qiao* ‘bridge’ and 枕头 *zhen-tou* ‘pillow’, for which the categorisation with the classifier 木 is much less transparent, given that it is only explained by going back to a period in which these artefacts were actually made of wood (cf. Taylor & Taylor, 2014, p. 57-58).

61. This has been well studied, under the name of orthographism or ‘*Effet Buben*’, regarding the writing of the French language (cf. Buben, 1935; Blanche-Benveniste & Chervel, 1978; Chevrot & Malderez, 1999).

Finally, it is crucial to signal that allography can indicate a categorisation and thus function as a classifier. In French, we are thinking of the use of upper case for the signified [INSTITUTION] in the writings <État>, <République>, or <Assemblée nationale> (Klinkenberg, 2005).⁶²

3.1.2. *The meta-graphemic functions: phonetic complements and other regulator graphemes* — In writing systems, certain graphemes—which can of course have other graphemic functions—are used indexically to clarify the function or the value of an adjacent grapheme; like classifiers, they are thus not autonomous in terms of graphemic syntax [–AUTONOMOUS]. These graphemes allow limits to be set on the polyfunctionality and polyphony of graphemes which carry them; thus we will distinguish regulators of function and regulators of value.

An example of the first category comes from hieroglyphic Egyptian: the vertical line ı (Z1) signals the use of a hieroglyph as an autonomous logogram, thus specifying its graphemic function. Thus, the spelling <⊙> can be employed to write the lexemes *rʿw* ‘day’, *rʿw* ‘Re (the god)’, or *sw* ‘day (calendrical)’, but in the three cases the hieroglyph of the sun (⊙) functions as a logogram, which is indicated explicitly by the vertical feature. This use is functionally distinct from that of the same grapheme used as a classifier, for example in $\text{𓂀} \text{𓂃} \text{𓂃} \text{𓂃}$ *jtn* ‘solar disk’, where the sign refers to the signified expressed by the three phonograms <𓂀> *j*, <𓂃> *t*, and <𓂃> *n*.

The regulators of value do not only specify the function, but also the content of the adjacent grapheme. The phonetic complements fall under this category. They can then correspond to a segmental realisation (such as the unilaterals <𓂀> *s*, <𓂀> *b*, and <𓂀> *ʒ* elucidating the reading of the trilateral <𓂀> *sbʒ* in <𓂀> 𓂀 𓂀 > *sbʒ* ‘door’ in hieroglyphic Egyptian), or have a strictly regulating function, like the use of <e> or <u> in French after <g> for disambiguating the readings /ʒ/ (e.g., in <gagueure>) and /g/ (e.g., in <blague>) of the grapheme <g>.

3.2. *Towards a typology of graphemic functions*

The preceding remarks permit us to specify Table 1 (§3 above) and to clarify the terminology used until now for graphemic functions. By mobilising the criteria of autonomy of graphemes, it is possible to distinguish (see already Polis & Rosmorduc, 2015): (1) within the category of *ideograms*, those which function as pictograms, firstly, and as classifiers, secondly; (2) among the *morphograms*, on the one hand logograms, which are employed in an autonomous way, and on the other hand non-autonomous morphemograms; and finally (3), in the functional class of

62. We also note that the categorisation made by the classifiers may not deal uniquely with the linguistic signified, as in the Chinese examples above: it can be the referent and not the signified that dictates the choice of classifier. For example, in place of the generic classifier ‘statue’ in Egyptian, we can use as a classifier a precise icon of the statue we are discussing (cf. Polis, this volume).

phonograms, on the one hand *phonemograms*, and on the other hand those which are used to help achieve an adequate reading of phonographic units, that is to say *phonetic complements*.

	+SEMOGRAPHIC		-SEMOGRAPHIC
	-PHONOGRAPHIC	+PHONOGRAPHIC	
+AUTONOMOUS	Pictogram	Logogram	Phonemogram
-AUTONOMOUS	Classifier	Morphemogram	Phonetic complement
	<i>Ideogram</i>	<i>Morphogram</i>	<i>Phonogram</i>

Table 2. Typology of the graphemic functions.

As appears at present from Table 2, non-autonomous graphemes are used to fulfil *meta-* functions, as much with respect to the language as with respect to the system of writing itself; in the first case we will speak of *meta-glossic* functions (morphological, syntactic or demarcative, semantic, and pragmatic), and in the second case of *meta-graphemic* functions.

3.2.1. *Syntagmatics of graphemes* — The notion of autonomy plays, as we see it, a central role in this typology. Yet it is necessary to dissociate clearly this notion, defined in relation with the functions of graphemes, from the contrast—which comes from visual toposyntax—between *free* graphemes and *bound* graphemes (Rogers, 2005, pp. 11-12), the latter also called *affixed* graphemes (Weingarten, 2013, p. 18), since they are a category obliged to visual combination with other graphemes and cannot be used on their own. Frequently called diacritics, bound graphemes are not limited to a particular function: the grave accent <`> combined with <a> has a logographic function in French, <à> being strictly reserved for the spelling of the allative preposition pronounced /a/, while the *matras* of devanagari writing record the different vowels (and their respective lengths).

Bound graphemes are not alone in being able to be combined with other graphemes. Free graphemes can also be arranged spatially to form, by composition, complex graphemes, according to a syntax relying principally on tabularisation—via horizontal or vertical combination of graphemes (like in 森 *sēn* ‘forest’ in Chinese from the grapheme 木 (cf. §3.1.1.)—, via insertion or connection (for hieroglyphic Egyptian, see Polis, this volume) and via fusion (in Mayan hieroglyphs, cf. Figure 3).

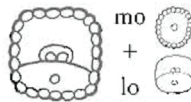


Fig. 3. The sign of the month *Mol*, with fusion of the syllabograms *mo* and *lo* (Coe & Van Stone, 2005, p. 26).

Consequently, although the link that the graphemes maintain with the linearity of the discourse orients towards a globally linear graphemic syntax, either in lines or columns (with cases of greater or lesser complexity, like hieroglyphic Mayan writing which proceeds by double columns read horizontally), this chronosyntax is constantly broken by scripts which fully exploit, as much by usage of bound graphemes as by the complex combination of free graphemes, the spatiality of writing.

3.2.2. *Motivation and iconicity* — This spatiality is also exploited on another level, that of the motivation governing the invention or creation of systems of writing. It is largely acknowledged that an *iconic* motivation normally governs the invention of systems of writing in civilisations which do not know the written word: Sumerian cuneiform, Egyptian and Mayan hieroglyphs, and Chinese characters are all originally bound to figurative forms⁶³ that serve as a basis for both semographic and phonographic graphemes. That said, other forms of motivation have historically been used at the moment of establishment of the code, but then we are dealing with creations of writing systems in a culture which already knows the written word rather than with invention *stricto sensu*. The graphemes of Korean hangul are based on *diagrammatic* iconicity, of which the form refers to the position of the vocal apparatus when it articulates the denoted phoneme. And it is a diagrammatic motivation of the system as a whole and a symbolic value of its units that we can recognise in a syllabary like the inuktitut, where the orientation of a grapheme refers to the associated vowel.

Iconic motivation has oriented certain theoreticians to speak of *icons* or of *pictograms* for referring to graphemes of repertoires based on this principle, and in particular for speaking of semograms.⁶⁴ Here there is a double error from the point of view of scripturology. On the one hand, a number of semograms have in their system no identifiable iconic value (in more precise terms, the stimulus of these signs don't coincide with the stimulus of an iconic sign): this is for example the case of Chinese semograms, which are only recognised as iconic by virtue of long study. Furthermore, if it happens that a stimulus having a given semographic value might be at the same time the stimulus of an icon, it is in this case not inevitable that the value of the icon may be the same as that of the semogram: a stimulus corresponding to the signifier of an icon of 'cow' could, as corresponding to a semographic signifier, have the value 'bovine' or 'cattle'; but it is not by an

63. And an internal iconic motivation for each of these systems can play a role in the development of graphemic repertoires (cf. Stauder, this volume).

64. To invoke the iconic origin to justify the iconic nature of semograms is not only to confuse gladly diachrony and synchrony, but also to place a suspect principle of radical autonomy at the origin of these writings. This position is dangerous in our eyes, since it limits the relationship it maintains with mnemography and with verbalisation (and thereby with language), so that it orients ultimately to deny the empirically verified continuum between pictography and logography.

iconic mechanism that ‘bovine’ or ‘cattle’ are identified in the context of writing, no more than on our street signs. Semograms and icons are thus radically different phenomena, and we suggest to use the term *para-iconicity* of semograms to counter this double confusion.

If the original iconic motivation can become largely imperceptible (we are thinking for example of cuneiform writing), the same applies a fortiori for repertoires forged by analogical or symbolic motivation (e.g. DeFrancis, 1989, p. 197), where the motivation is no longer perceived and where they are frequently units of a higher level (for example the compound syllabic graphemes in hangul) which are felt by the writer as minimal units. These functions, evanescent in the graphemic domain, are by contrast central for grammemic signifiers.

4. The grammeme and grammemic functions

The production of grammemes is conditioned by two characteristics of writing. The first is its spatiality. It is this spatiality that makes relevant the categories ‘figurative’ (or ‘iconic’) and ‘plastic’, which are classics in visual semiotics (cf. §1.1.2.). The second is the fact that the production of graphemic functions has a certain *freedom of execution* in the performance of the written utterance.⁶⁵ We therefore call ‘grammeme’ any semiotic device produced by the choices made among the different realisations and possible arrangements of graphemic signifiers, choices producing a new semiosis, of which the substance is sometimes iconic and sometimes plastic.

4.1. *The role of free variation: from constituents to formats*

The possibility of producing free variants opens the way to the concept of style. Two features of this notion are frequently raised by the different theories of style. On the one hand, they highlight that style is made of additional structures (but often neglect to specify in relation to what); we speak thus of ‘addition of meaning’ or of ‘overcoding’. On the other hand, we emphasise that these additions of structures are only possible in cases where the same semiotic fact can be actualised in several ways, the style of an utterance being the resultant choice made from among these possibilities.⁶⁶

Writing systems are abstract normative models that have variations carrying meaning and which can be bundled into families. These families are known under

65. ‘Graphetics’ (Coulmas, 1996, pp. 177-178; Meletis 2015), a term forged by analogy with ‘phonetics’, endeavours to study the visual characteristics of signs of writing and the constraints of their production (minimal forms and distinctions between classes of allographs; number, organisation and distribution of features; possible movements of the hand and links with the attested ductus; etc.). This discipline thus covers a large part of the domain handled by the study of grammemic signifiers.

66. On the semiotic redefinition of the concept of style, cf. Prieto (1966, pp. 168-169), and on the notion of visual style, see Groupe μ (1995).

different names; for example: script types, national scripts, fonts, hands, and of course styles. These families of variations constitute as many paradigms, ordered along an axis that goes from more constrained and socialised choices—considered as acceptable by a collectivity, in acceptable combinations—to more individualised and singularised choices. Whether socialised or individualised, these paradigms always involve the producers and receivers of written utterances: the style of a particular writing can in effect be defined as the combination of certain features (present in the utterance in certain proportions), which imply the interaction between the graphemic system on the one hand and these instances on the other. As with every form of variation, grammemic variation in synchrony carries with it the evolution of norms of the written word in a given community from a diachronic point of view.

The choices or possible selections can be extremely numerous, and thus produce a collection of singular instances. If these are recurrent, that is to say a determined feature is frequently associated with a producer or a group of producers, it yields a signature effect. Thus we find grammemic features having a geographical or cultural area for a signified. We easily recognise for example on a page the traces of a writer either trained in England—and more generally in the Commonwealth—or coming from central Europe. And palaeographers can easily identify the era of a manuscript or the *scriptorium* where it was prepared (see in this sense the classic study of Parkes, 1979). In print publication, the choice of fonts plays an analogous role, referring this time no longer to a group, but to a community of values: the combination of signifier features manifested by the serif, the x-height, the position of the axis and the relative weight of strokes within a character can be placed in relation with signifieds such as ‘heaviness’, ‘neatness’, ‘fantasy’, ‘modernity’, or ‘elegance’ (cf. Lindekens, 1971; Bringhurst, 2012). And, just like a face or digital fingerprints, one’s writing permits the more or less easy identification of an individual, depending on the surrounding normativity.

It should be noted that the production of grammemes does not originate only from the plastic choices made in the constitution of the stimulus, but can also come about by the choice of a variant in graphemic relation. Take for example the pleasing introduction of the letter <k> in the scripts of a number of Latin languages where <c> was most often used to record the phoneme /k/, which produces signifieds anywhere from ‘hardness’ to ‘Germanness’ or ‘Indianness’.

The observations we have just made about the paradigmatic domain can be extended to the syntagmatic domain:⁶⁷ the combination of grammemes produces units of variable length (for example list items, headings, lines, paragraphs, etc.) that are themselves potentially grammemes possessing their own signified, which well exceeds just the structuring of the written utterance (see §4.2.). Like graphemes, which can be combined into complex units, grammemes can be

67. We refer here in particular to the studies of Anis (1988a, pp. 171-241, 1997, 1998) on graphic spaces and the visuo-text.

recursively integrated, and it is generally the blank spaces or gaps which allow the distinction of different levels of relevance (Meletis, 2015). Grammmemes can thus be envisaged as a ‘texture’ of the written, a term⁶⁸ which intends to account for both the paradigmatic (qualitative) and syntagmatic dimensions of grammemes which, like a textile, are combined in units.

4.2. *The functions of grammemes*

On the content plane, grammemes can be brought back to the three main types that the typology proposed by Peircean semiotics identifies: symbols, indexes, icons (cf. Klinkenberg, 2018).

4.2.1. *Symbolic functions* — The examples of signifieds of grammemic variants or typographic fonts supplied above (§4.1.), as also that of Comic Sans MS supplied towards the beginning (§1.2.2.), belong to this category of functions.

These variables can be contextual. We are thinking for example of {bold}, {body}, {italics}, {underline}, which distinguish the relative importance of passages of a text or confer to them a specialised status (‘citation’, ‘foreign word’, ‘new technical word’, etc.), of the {colour} of letters in a manuscript, of {illumination} in an printed book (e.g., missal) or on a monumental inscription. Oriental calligraphy also conveys signifieds of this kind.⁶⁹

The main grammemic content of the symbol family tends to group itself into three thematic families: space, time, and society.

The examples cited above—Britishness, Middle-Europeanness, Germanness, etc.—come from the first category. The semiotic function can also refer to a chronological layer, as would be the case with a Francophone pasticheur who would systematically replace his ‘i’ with ‘y’. And when the Belgian author Charles De Coster chose, in his *Légende d’Ulenpiegel* (1867), to transcribe the <s> within words by the allograph <f> (“*Pendant qu’Ulenpiegel y buvait à même, tous les oifeaux s’éveillèrent dans la campagne*”) and to conjure up the non-initial ‘et’ in the guise of the ampersand (*‘braveté, honnêteté & douceur*’), he manifests an archaising bias which matches his other stylistic choices: the usage of these signs had in effect fallen into obsolescence in the first part of the 19th century. Finally the grammeme can refer to a sociologically definable variable: we can speak of writing that is ‘aristocratic’, ‘vulgar’, etc. All these values can of course be combined, and vary in relation to each other. For example, the *Frakturschrift*, which had appeared in Germany as the bearer of the positive signified ‘Germanness’, changed status in 1941.

But the symbolic function can also give birth to rigorous micro-systems, where specific rules are at work. First example: bibliographic references, where {capitals} refer to a ‘proper name’, {italics} to ‘title (of a work or journal)’, the sign

68. Used, without being elaborated on, by Krämer (2016, p. 11).

69. Arabyan (this volume) shows how the opening and closing paragraph indentations, apart from their role of structuring the text, are associated with gender signifieds (both textual and sexual).

{=} potentially to a ‘collection’, where {commas} and {full stops} are distributed according to strict rules. Second example: the uses of the Web page. A {contrast of colours} within an utterance may signify: ‘clicking on this character string permits the activation of a hypertextual link, the identity of which is designated by this segment of utterance’; an {underline} has the same signification, so that there is a redundancy; more redundancy with a group like {<http://>}, functioning globally as an ideogram signifying ‘internet’; a {modification of colour}, this time along the temporal axis, signifies: ‘hypertextual link has already been activated’, etc.

4.2.2. *Indicial functions* — The indicial functions are those covered by the grammemes of which the characteristics of the expression plane are causally motivated by the status or the dispositions of the writers and which, on the content plane, refer to this status or these dispositions. In the case of handwritten writing, the stimulus of the grapheme—characterised by a ductus—can thus refer to the dispositions of the producer of the writing: we speak thus of ‘rapid’ or ‘untidy’ writing, contents implying the enunciative process. This stimulus refers thus not only to the graphemic signifier, but also to the grammemic indicial signifier. Figure 4 illustrates the opposition between two hands: that of the author and that of his secretary.

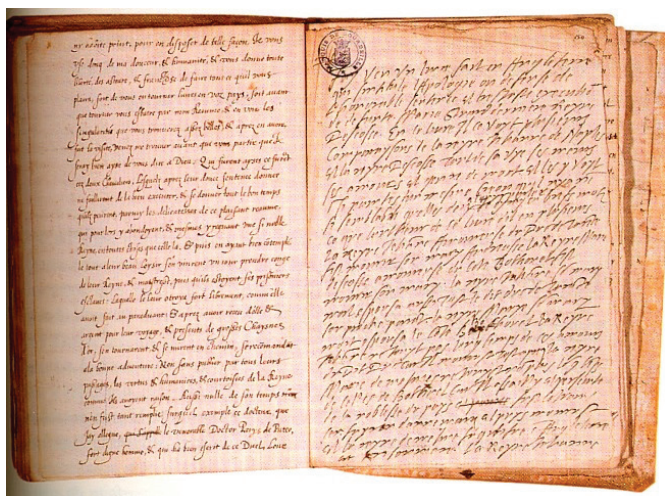


Fig. 4. Manuscript of *Les Vies des dames galantes de son temps* by Brantôme.

It is on the hypothesis of such indicial relations that graphology is based. Here it is not a question of whether its rules are valid or not (in other terms, whether the relation of causality is proven, postulated, or imaginary). The signature or the oriental red stamps also have an indicial function, in that they refer to the effectiveness of the process of enunciation (and thus to its social validity).

We must emphasise that the indicial signifieds are less directly accessible in contemporary electronic communication in which standard fonts are used. But the usage of emoticons translating the mood of the writer (annoyed, serious, etc.)

in part ensures indicial functions which can no longer be expressed on the grammemic level.

4.2.3. *Iconic functions* — Finally, in the iconic functions, the stimulus of a sign of writing (or of a constituent part of a sign, or of a block of signs) refers simultaneously to two signifiers, one of a graphemic nature—of course—and the other of an iconic nature. Qualitatively speaking, we note that the iconographic interpenetration can be produced on all levels of complexity of the scriptural utterance and touches all writing systems without distinction, whether or not their graphemes are themselves of iconic origins (like hieroglyphic Egyptian).

If we take the levels of articulation of the scriptural part of the utterance as a scale, the icon can be produced at the bottom as well as at the top of it.

In the first case, the iconogram results from the minimal constituents of this written utterance: the grapheme, or even a part of the grapheme.⁷⁰ If we take the levels of articulation of the iconic part as a scale, the global recognition of the forms of the stimulus can be assured by the totality of the graphical masses. On a lower level, the graphic objects only iconise some determinants of the iconic sign. Descending the scale further, the graphic objects can even iconise just a simple formeme⁷¹ of the iconic sign, such as the orientation or variations of orientation in a movement.

In the second case, the iconogram is constituted by the combination of graphemes (up to the (quasi-)totality of the scriptural utterance).⁷² The organisation of the utterance is then made according to the laws of particular syntaxes that could be called iconosyntaxes (Édeline 1974, 1998, 2004). Here there is an interpenetration of units of two semiotics, which their shared spatial character makes possible. Here again, the interpenetration between the scriptural sign and the iconic sign can be described in the following manner: one (empirical) stimulus refers simultaneously to two signifiers, one of an iconic nature and the other of a scriptural nature.⁷³

The best example of the manifestation of this iconosyntax is without doubt to be sought towards what is agreed to be called calligrams⁷⁴ or iconograms. It is a phenomenon that we find in all cultures, observable with all types of writing, and

70. In more rigorous terms, we would say that the stimulus of the icon is here constituted of spatial facts which moreover make up a part of the stimulus of a graphemic sign.

71. The formeme is the minimal determinant of the parameter 'form' of the visual sign: position, orientation, etc. Cf. Groupe μ (1992 and 2018).

72. Again in more rigorous terms, we would say that the stimulus of the icon is constituted of spatial facts which moreover make up the stimuli of graphemic signs.

73. On the perception plane, this mechanism corresponds to a bistability: one perceives simultaneously or successively the stimulus of two distinct models.

74. The term 'calligram' certainly has its own usage, but we prefer the terminology of iconogram. Moreover, 'calligram' tends to designate only those utterances characterised by what we will call below predominantly scriptural, to the exclusion of predominantly iconic utterances, where we observe the same interpenetration between scriptural sign and iconic sign.

a tradition dating back to the furthest antiquity. We can see it functioning today in advertisements, but also famously in ancient Egyptian, in those cases where the icons and graphemes can be superposed almost exactly.

An exhaustive study of the rules of interpenetration of the graphic sign and the iconic sign (which a semiotics of writing should list, but to which we do not commit ourselves here) would show that these are numerous. We would also see that the iconographic utterances can be predominantly iconic or predominantly scriptural. The factors assuring the prevalence of one or the other type are quantitative as much as qualitative. In the first case, we underline the role of the residues. If the utterance contains an iconic residue that is not able to be subject to a scriptural interpretation, then what is dominant is iconic, as in the work of René Magritte, *L'Art de la conversation* (Figure 5): the majority of determinants of the iconic type 'ruins' do not constitute letters, so that the type 'ruins' is dominant.

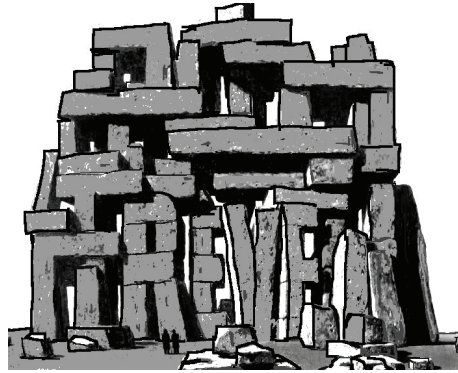


Fig. 5. Predominantly iconic iconogram.
Drawing after René Magritte, *L'Art de la conversation*.

The opposite can be observed in the poem in Figure 6 (of Guillaume Apollinaire), where the heading escapes an iconic reading: what predominates here is scriptural. Iconograms without residues, that is to say where the totality of constituents is simultaneously legible in the two modes, are relatively less frequent.⁷⁵

75. On these iconic functions and the other writing-icon interactions, see Klinkenberg (2008).

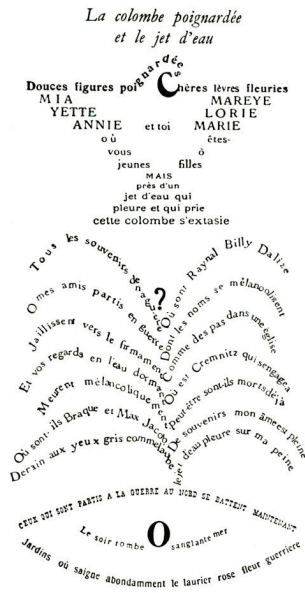


Fig. 6. Predominantly scriptural iconogram.
Guillaume Apollinaire, *La Colombe poignardée et le jet d'eau*.

5. The scripteme and scriptemic functions

The fundamental principle of the integrational approach to writing (and thereafter of every form of semiosis) that Roy Harris proposes is the context which frames the effective circumstances of the written communication. His positions are detailed in *La Sémiologie de l'écriture* (1993, pp. 133-150), where he upends traditional perspectives: writing should be analysed firstly in relation to the context within which it is deployed as a creative social practice. (Firstly, if not exclusively: his case studies indeed show that he seems to doubt the very possibility of an analysis of writing in elementary units). He also affirms that “*la communication écrite peut créer ses propres moyens d'expression : elle n'a pas besoin d'un code préétabli — elle n'a besoin que d'un contexte*” (1993, p. 136 [italics in the original]). The basic unit is thus no longer the sign of writing in its atomic dimension, as a member of a system of abstract correlations, but the utterance as a complex and contextualised unit. Nevertheless Harris does not supply the means for describing the techniques which govern this integration, which is what we will occupy ourselves with here.

In the context of scripturology, when the graphic substance is interpreted as a semiotic form of expression according to a contextualised practice of writing, the minimal signifiers are scriptemes (§1.1.2.). The graphemic system and the grammemic norms are then relegated to the background: the scripteme is the expression plane of a particular semiosis, namely a contextualised practice. And

this semiotic is analysed in terms of spatial relations, crucial for us as much as for Harris. Indeed, the scripteme comes, as a sign, from the family of indexes, already summarily presented in paragraph 2, but which demands a fuller treatment here.

5.1. *The index: generalities*

The index—which must not be confused with the *indice*—is a semiotic device having a double function (i) to focus the semiotic attention of the actors on a determined portion of space (and especially to separate an object), and (ii) to give a particular status to this portion of space and to this object. A canonical example is the pointing finger; but we could think here also of the frame of a picture, of the labels indicating the food content of bottles and cans, of the front cover of books, etc. This device is deployed mainly in the most complex semioses, and is the subject of an important cultural investment: the type of reference it generates is extremely conventional (unlike that of the *indice*).

Broadly speaking, the nature of objects called to constitute the expression plane of indexes is very variable. These indexes can thus be linguistic, for example deictics and connectors. There are still other explicit indexes, like /lines/ and /arrows/ indicating in a pluricode utterance the equivalence between the linguistic portion of an utterance and its iconic portion. But the index can be manifested by no specialised sign: the indexical function is then assumed by simple spatial proximity.

The index mobilises three constituent elements: (1) the unit(s) constituting its expression plane (/pointing finger/, /label/, etc.) or *indexer*; (2) the portion of designated space, this sector becoming the object of the indexation, hence being called the *indexed*, and (3) the relation that the first establishes with the second ('designate', 'give a certain status', etc.), or the *indexation*. This is summarised in the schema of Figure 7.

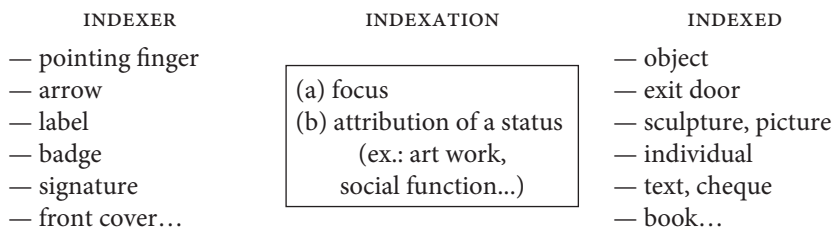


Fig. 7. Structure of the index.

Indexation has two functions, the second being optional. The first consists of focusing the attention of the subject on determined portions of space. The indexes are thus devices of densification in the sense or 'barysemiotisation' (sc. §2). The second function consists of conferring a precise value to this indexed, via an inference. For example, the museum and the museum hall,

as nested indexers, contribute to giving to a visible manifestation the status ‘work of art’; the signature at the bottom of a written document confers to the indexed text a signification which can be, depending on the context, ‘certified’, ‘produced by x’, etc. Without this constituting a general rule, indexation frequently has the effect of giving the status of sign to the indexed.

The index presupposes the concept of neighbourhood—which will be specified below—and the properly indexical meaning is given to the indexed by three series of factors: (i) perceptive factors, to which we will return (§5.3.2.); (ii) sectoral semantics of which the contexts are the object, semantics all based on the semiotisation of the space (architectural semiotics, of the landscape, of manufactured objects, etc.): for the indexer to designate a portion of space, this indexed space must be perceived beforehand as a unit coherent and distinct from its surroundings and its structure must be correctly identified (for example a building with clearly defined boundaries, as opposed to a landscape, where the delimitation is fuzzy); (iii) social praxis (reading a book, visiting a city, going to a sacred place, verifying official documents, etc.).

5.2. *The index in scripturology*

As we have seen in the examples cited above, scriptural objects constitute particular cases of indexes. The specificity of writing being its spatial substance, we should not be surprised to find that this type of device plays a role at all levels of pertinence studied by scripturology.

For the graphemic functions, for example, we observe that the morphemograms are indexes: the [s] of the plural in French points to a contiguous unit, the structure of which is identified with precision (it comes before it and not after, and its limits are clearly established) and to which it confers a precise function. This is also the case for demarcative syntactic functions: indexical marks indicate that a graphic object (or a sequence of objects) adjacent to a punctuation mark must be considered as a unit; the demarcative indexer signals the limit(s) of the unit, and thus indicates the spatial extension, as much as it attributes a status to the indexed: the final <.> gives to the graphemes which precede the status of a syntactically autonomous utterance in Latin writing systems; the classifiers are also indexers, since they signal membership of an adjacent unit (or of a group of adjacent units) to a category. And the same applies to regulator graphemes (§3.1.2.).

But it is the role of the index in relation to scriptemic function which is of interest here. Analysing writing from the integrational point of view brings to light the principles of indexicality of written utterances.

5.3. Typology of scriptemic indexical relations

5.3.1. *Syntax of indexation* — From a syntactic point of view, the indexical relation can be of two types: either it is established within the written utterance itself⁷⁶ or it associates the utterance with its context. In the first case, we will speak of ‘internal’ indexicality, and in the second of ‘external’ indexicality. When it is internal, the index can sometimes link portions of the relevant utterance of a unique code, and sometimes associate portions of a complex unique utterance resorting to distinct codes; internal indexicality is thus ‘intracodal’ or ‘intercodal’. External indexicality also has two modalities, according to which the indexer is constituted by the context itself (the indexed being then the written utterance) or according to which the indexer is the written utterance (the indexed being then the context); we speak in the first case of ‘centripetal’ external indexicality, and in the second of ‘centrifugal’ external indexicality. We illustrate these four configurations below.

(a) *Internal intracodal indexicality*. As an example of internal indexicality in the scriptural field, we can return to the practice of the signature (§1.2.3.). The indexer of the signature is segregated within the global written utterance and identified thanks to two features: [positioning] + [global *Gestalt*], and an indexical relation is established between this indexer and the adjacent indexed sub-utterance.

(b) *Internal intercodal indexicality*. The example type here is the case of the comic book, a global utterance where the [tail of the speech bubble] associates a linguistic sub-utterance and an iconic sub-utterance, with the precise value of ‘deictic of enunciation’.

(c) *External centripetal indexicality*. Here the indexer is the context, which confers its values on the written utterance. If, thanks to a series of features like [format of the paper], [texture of the paper], [presence of a seal], an object can be identified as ‘notarised document’, we can make an inferential gamble on the nature of the text it bears, even without having begun an interpretation based on grammemic or graphemic factors. Likewise, identifying a construction as ‘religious edifice’ orients a priori the interpretation of scriptural data that we can find.

(d) *External centrifugal indexicality*. Take for example the appearance of [supermarket] on a building: thanks to indexation, the status ‘supermarket’ is attributed to the totality of the volume on which the linguistic expression appears. We can also think of the border stelae which delimit the territory of the new capital, Tell el-Amarna, established by Akhenaten in Egypt around 1350 BCE. And the examples keep coming: the title of a work or painting, names of buildings or halls, badges on officials, commercial packaging, the name of a deceased person on a tomb, etc.

76. The boundary of this utterance rests on factors which we cannot detail here. For more details, cf. Klinkenberg (2008).

5.3.2. *Variables of indexation* — The precise value of the scripteme depends on a series of variables that we examine here.

(a) *Spatial range of indexation*. The proximity or the distance between the indexer and the indexed can play a certain role in the identification of indexation. For example, in a museum, the distance between the label and the indexed work can endanger this identification, progressively as the distance increases. But the spatial range is not measured in a simple and linear manner. As a matter of fact, the identification of intracodal internal indexicality which associates a footnote reference and the actual note at the bottom of the page in no way depends on a measurable physical distance (and still less that of the relation between a clickable segment of text and the web page to which it refers). We should also highlight that we have used until now, to discuss this range, the term ‘neighbourhood’: borrowed from topology, it implies no prejudgement about the distance between two elements.⁷⁷

(b) *Spatial structure of the indexer and the indexed*. Relative to the preceding, this variable can also modify the conditions of the inference. In the case of a building like ‘supermarket’, we are dealing with an enclosed entity with clear limits, identifiable as such thanks to the skills of the recipients in interpreting the semiotics of space. But the boundaries of Tell el-Amarna of course do not have such rigidity. And when, in his well known garden, Ian Hamilton Finlay deposited a stone carrying the monogram of Albrecht Dürer next to tufts of herbs—a clear allusion to the work *Das große Rasenstück* of the German engraver—, the indexed space has an extension that can only be very vague (cf. Édeline, 2005).

(c) *Energy of indexation*. These two variables show that an indexical relation can be weakly or strongly perceived; we speak in this case of weak or strong indexation. But this energy does not derive solely from the two factors mentioned: it proceeds especially from variables more resolutely qualitative, the principal being the competence of the recipients. For example, if confronted with the representation of a leaf with four features [stamp impression] + [colour red] + [strong symmetry] + [emplacement], those unfamiliar with oriental cultures cannot see the intensity of the internal intracodal indexicality in the work, and they may not know that we are dealing with a ‘guarantee’ of the same type as that of the Western signature. Energy of indexation and socialisation of the index are thus synonyms.

77. In the traditional terminology we often find the term ‘contiguity’, unfortunate in that it connotes proximity (since indexation can concern distant objects: we can point to the moon with our finger). It is these features of contiguity or vicinity which account for the frequent confusion between indexes and indices (cf. Klinkenberg, 1996), notably among the supporters of the Peircean tradition. But the spatial contiguity which appears here is not the same as for the indice, if this word is taken in the causal sense of the term; this confusion does not seem to have been perceived by semioticians, apart from Umberto Eco (1988). The confusion is equally due to the quasi-homonymy of the French words ‘indice’ and ‘index’ (in many other languages, the homonymy is even absolute).

(d) *Respective semantisms of the indexer and of the indexed.* The last factor, without doubt the most important, is decidedly qualitative: it is the determination of the compatibility of respective semantisms of the indexer and the indexed. Two examples suffice, one chosen from among the internal intracodal indexes, the other within external centrifugal indexes.

If signing is broadly the use of one's name to act, according to the fortunate formula of Fraenkel (1992, p. 12), the value of this action does not differ less significantly according to the nature of the indexed (internal intracodal indexation): affixed to a legal act, the signature sanctions the endorsement of the content; closing a love letter, it affirms the passion of its author; and sketched on the t-shirt of a fan, it is the tangible trace of a (too) fleeting copresence. Most often, a plaque affixed to the entrance of a street and carrying its name produces a semiosis of which the result is a coreference: the plaque 'Avenue des Champs-Élysées' has a meaning the same as that of the urban environment of the perceived avenue (external centrifugal indexation); but this same plaque found in a living room would not index the place, but rather the doubtful appeal of the Parisian splendours for an individual who is inevitably foreign to them.

These two examples permit us to see that the respective semantisms of the indexer and the indexed can sometimes converge (producing an isotopy) and sometimes diverge (producing an allotopy). We note that the existence of such allotopies opens the way for a rhetoric of scriptemes. But above all most important to observe here is how crucial the context is in the interpretation of the pragmatic functions of scriptemes and at what point all variation in the constituents of this latter go invariably together with a change of the semioses produced. Perri (2007a, 2012, 2014) has insisted repeatedly on the necessity of seriously discussing the social determinants linked to the usages of writing and to the circulation of written messages, but of course much remains to be done here and, given the variety of macro-societal uses of writing, a complete systematisation of scriptemes is still far from being achieved.

5.4. *The acts of writing: pragmatic functions of scriptemes*

In pragmatic terms, the index hinges on the gamble of a successful inference, which is more or less evident depending on the type of indexicality we are dealing with (§5.3.1.) and the parameters of indexation described above (§5.3.2.): a man pointing a finger at the moon hopes that it is the moon rather than his finger that others look at. If successful, the resulting semantisation that takes place is a *faire savoir* ('making know') and the supposed focus potentially leads to a *faire faire* ('making do'). A finger pointed at the moon invites the onlooker to turn their eye towards that thing. Likewise with scriptemes, the reader is not only invited to invest a portion of space with a precise meaning; as a performative utterance with conditions of success, the scripteme potentially pushes the reader to act: a super-

script number suggests to the reader to check the bottom of the page (or end of the publication), a hypertext link invites one to click through, a church extends an invitation to mourn before an ex-voto or piously decipher the Latin of ancient inscriptions, and an illustrated plaque at a scenic viewing platform calls on visitors to turn their gaze to particular landscape features.

The scripteme is thus not only the trace of the writer's *know-how* carrying within it a *making know*: it also potentially possesses a certain illocutionary force, to apply the terminology of Austin and Searle to scriptemes. To date, however, this domain of scripturology has not been studied in any systematic fashion and remains a field waiting to be explored.

6. Conclusions

We opened this essay with a heuristic analogy with language typology, and it is perhaps useful to come back to it in the conclusion in order to specify how the point of view of scripturology permits us to escape the pessimistic opinion of Sampson (2015, p. 566)—according to which “relative to other branches of linguistics, for the study of writing systems issues of typology are unusually contentious, unusually significant, and also unusually difficult to research. That combination is perhaps unfortunate. But it is the way things are”—and to reconsider two big questions posed at the beginning.

- Scripturology does not imply the renunciation of a *classification perspective*, but rather invites us to avoid simplification of categories based on unique principles and evade arborescent typologies, as reasonable as they may be (e.g., Haas, 1976; Sampson 2015, pp. 20-26). Any system of writing possesses necessarily two sub-sets of features, the first arising from its spatial nature and the second resulting from its relationship with language. With that established, the classificatory approach would benefit from combining the qualitative and the quantitative: what graphemic (§3.2.), grammemic (§4.2.) and scriptemic (§5) functions are possible and actualized in the different writing systems of the world? what are the syntagmatic possibilities at these different levels? and what is their distribution? These actualizations and distributions indeed determine the types of analysis of language and experience (§3.1.) performed by individual writing systems.
- Neither does scripturology renounce research into generalisations or the *quest for universals*. On the contrary, it elicits them, but with fresh insight. Diverging from tautology (DeFrancis, 1989) or disputable principles (like the (mono-) syllabic hypothesis of Daniels, 2018), it allows us to envision questions such as: do all the graphemes possessing a classifying function also have a demarcative syntactic value? Does every system of writing possessing phonemograms also have graphemes functioning as phonetic complements? One could of course

multiply the inquiries of this kind and extend them to the domains of the grammemes and scriptemes.

But a proper response to these questions is not simple, since it implies first of all a return towards the empirical material with a lens informed to a greater or lesser extent by the theoretical apparatus sketched here. It is, we hope, to clarify these questions that the present volume can contribute.

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