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Folding the Narrative: The Dimensionality of Writing in French Structuralism (1966–1972)

Dimensionality

When in 1884 under the pseudonym A Square, Edwin A. Abbott wrote his novella *Flatland: A Romance of Many Dimensions* about the perception of two-dimensional beings, his principal concern was to expand the consciousness of the three-dimensional beings making up the book's readership.[1] Accordingly, these late-19th-century readers should be helped to visualize the possibility of a fourth dimension; and because in a world known as three-dimensional this fourth dimension was not so readily perceivable, an expansion of consciousness was required by means of the literary stimulation of the reader's imagination. In this way, Abbott's novella also helped the sciences and particularly mathematics, since in the 19th century the latter had turned towards objects of knowledge of uncertain ontological status. A well-known example were the non-Euclidean geometries – that is, geometric systems that were internally consistent, but rested on different axioms than those of the geometry handed down since Euclid, which seemed to correspond so perfectly to the three-dimensional world, and thus in the 17th century became the ideal tool of the newly differentiating natural sciences, as well as, in *more geometrico,* a favored method of philosophical argumentation.[2]

1 Abbott/A Square 1884. In the second edition from the same year, 1884, the editor (presumably Abbott) in the *Preface to the Second and Revised Edition* addresses this reader in the name of his friend from Flatland, the fictive author A Square, in this sense: namely, as "readers and critics in Spaceland." Anonymous 1884, IX.

2 The argumentation *more geometrico* can be found in the work of René Descartes and Baruch de Spinoza among others. On the ontological question in the mathematics of the 19th century, see Gray 1992.

In the 19th century the construction of alternative geometries and the hypothesis of unknown dimensions shook up the sciences as well as the common knowledge of the period, and to compensate required an altered view of reality. The novella *Flatland* set out to provide such a compensation and, to this end, made use of an analogy. To the two-dimension characters of the novella, the Euclidean geometry based on a three-dimensional world would have to appear just as *fictitious* as the non-Euclidean geometries to many three-dimensional readers (including some mathematicians).[3] Abbott's novella corrects this judgment of fictitiousness and attributes to the new epistemological objects at least credibility and thus conditional reality. At the same time, he schooled the reader in the conviction that reality should, on the basis of science, be augmented by an invisible element, since at least the fourth dimension (as well as further dimensions and hence worlds) awaited discovery and axiomatic formulation. In the 19th century the world felt to be real was fraying both scientifically and narratively into the imaginary; in other words, reality seemed to contain further worlds hidden inside itself as if these were folded into being.

The embrace of a fourth dimension in the 19th century led to encounters not only between science and literature, but also between science and spiritualism, which despite their differences formed a generally binding consciousness of the dimensionality of the world.[4] Here, as an education in the new dimensions, literature acted as a welcome ally; however, it also represented a danger, since either it neglected epistemological analogies in favor of a science *fiction* (e.g. Jules Verne) or it *formalized* its own world by declaring speech and writing to be its basis in reality (e.g. Stéphane Mallarmé).[5] In neither case does it escape the awareness of dimensions, since also the literary and scientific consideration of speech and writing from the end of the 19th century onwards notes a dimensionality of these media. A dimension of writing and narration is explicitly determined by French structuralism and neostructuralism in the 1960s. Surprising with regard to the struc-

3 In the second half of the 19th century the analogy was ennobled by James Clerk Maxwell into a method for acquiring scientific knowledge. See Maxwell 1890, 155–159.

4 See Macho 2004; Henderson 1983.

5 On literary science fiction, see for example *Vingt mille lieues sous les mers* (*Twenty Thousand Leagues Under the Sea,* 1873) by Jules Verne (appearing in installments from March 1869 to June 1870; published as a book in 1871), a novel that in the activities of Captain Nemo allegorizes the 19th century passion for discovery and the hypostatized unknown worlds within the known world. The name of this figure, who operates as hinge between the worlds, recalls the figure of Odysseus in Homer's *Odyssey,* and thus that world-wanderer who in the episode with the Cyclops identifies himself verbally as Nobody, which leads to the paradoxical result that *Nobody* gouges out the eye of the Cyclops. For a *formalization* of the poetic literature of Stéphane Mallarmé and especially his late work, see *Un coup de dés jamais n'abolira le hasard* (1897), which activates as literary elements the sheet and the blank areas between the letters via typography and the layout of the page, and thus reflects on the material conditions of writing and literature as well as of reading. For a literature that makes use of methodological analogies to the sciences, see the cycle of novels *Les Rougon-Macquart* (1871–1893) by Émile Zola (with reference to heredity) and Paul Valéry's texts on Monsieur Teste, which attempt a physiological and psychological modeling of consciousness (first text: *La Soirée avec Monsieur Teste,* 1896).

turalist concept of dimension is that this is conceived rather simply, since, as in the 19th century, it denotes a direction of Euclidean space: that is, length (dimension 1), width (dimension 2), and height (dimension 3). This concept of dimension is expanded only insofar as it is now understood more abstractly as the degree of freedom of movement or of a particular position. Although in the early 20th century mathematics increasingly diversifies and complicates the concept of dimension (for example in Hermann Minkowski's concept of space-time from 1907–1908, the Hamel dimension in a vector space from 1905, and the so-called Lebesgue covering dimension or topological dimension of the 1930s), the general understanding of dimension remains relatively conventional, since it is still basically oriented to the three dimensions of Euclidean space. The fourth dimension in this general understanding is primarily identified – at the latest, since the popularization of Albert Einstein's special and general theory of relativity (published in 1905 and 1915 respectively) – with time, while both space and time are understood as relative values dependent on gravity (or matter). For Abbott and his contemporaries the fourth dimension in contrast was of a radically unknown nature, and as invisible as the third dimension for the two-dimensional beings in *Flatland*. This can be gathered from the remarks of the (fictitious) two-dimensional author A Square quoted in the preface to the second edition by the anonymous editor:

> "It is true that we have really in Flatland a Third unrecognized Dimension called 'height,' just as it is also true that you have really in Spaceland a Fourth unrecognized Dimension, called by no name at present, but which I will call 'extra-height.' But we can no more take cognizance of our 'height' than you can of your 'extra-height.'"[6]

Hence, the experience or attribution of dimensions is not self-evident, but historically determined. In the following an episode of contentious dimensionality in structuralist analyses of writing and narration from 1966 to 1972 will be reconstructed and critically contextualized through references to the time-bound materiality of writing and narration in the book, and in this context to implicit and explicit "dimensional prejudices" (as Abbott would call them).[7] Here, the trickster position between the dimensions is assigned a material operation from book production: the fold.

6 Anonymous 1884, X. In the logic of the narrative and paratext, the author A Square is imprisoned in his homeland Flatland for asserting a third dimension, because he is not able to show either how this could be *measured* nor what *direction* it opens up. Accordingly, his cohabitants are *prejudiced* or lacking in *faith*. See ibid, XII.

7 Ibid.

Dimension 1

In 1966 no. 8 of the journal *Communications* appeared with contributions by among others the philosopher and semiologist Roland Barthes, the literary theorist Gérard Genette, and the philosopher and semiologist Tzvetan Todorov.[8] The issue focused on the theory of literary narrative, and the contributions by the above-named authors have in retrospect led to this issue of *Communications* being perceived as the "founding document of a 'French school' of structural analysis of narrative"[9] – whereby the "tentative profile"[10] set out in the issue was expanded on in later texts. In his contribution Barthes names structuralism as a framework and method when he separates narrative from its diverse "vehicles" (language, image, gesture, etc.) to explain the thus won *universal fact of narrative* via "an implicit system of units and rules."[11] Barthes is concerned with the hypothetical creation of a generally valid "structure of narrative," which he also describes as a "code," one that the narrator is aware of and able to activate.[12] For the planned scientific deduction of the narrative structure, Barthes draws (as do the structuralists in general) on the model of linguistics, since this attempts to come to grips with the variance of languages via the concept of the sign and, in the phonology of Roman Jakobson and Morris Halle, via the identification of a universal binary system of twelve distinctive features (*Fundamentals of Language*, 1956). The structuralists' understanding of structure is influenced by the concept of code found in information theory – similar to biology's integration of the concepts of code and program already from the 1940s to the 1960s. The promise of this methodological decision lies in the attainment of a universal and formal systematics that is able to reduce a multitude of isolated phenomena to a few elements and the rules for their combination. In her historical investigation *Who Wrote the Book of Life,* Lily E. Kay has shown in detail how after World War II biology adopted the concepts of information and code from information theory into biology, which in genetics became driving metaphors that were able to bring together different lines and approaches of research, and eventually contributed to the molecular biological deciphering of the genetic code.[13] Here, right from the beginning, the concept of code was linked to the concept of writing, since the genetic code is understood as a *transcription* – that is, the regulated transcription of a particular sequence of base pairs (i.e. genetic information) contained in DNA into a nucleotide sequence of the RNA strand, as well as the subsequent translation into the amino acid sequence of a protein. The analysis of this *genetic writing* hypostatized as

8 See Barthes 1966; Todorov 1966; Genette 1966. In the following, quoted from the English translations.

9 Vogt 1998, 300.

10 On the status of the contributions gathered in *Communications* no. 8 as a "tentative profile" for the searched-for structural theory of narrative, see Barthes 1975, 243.

11 Ibid, 237 and 238.

12 Ibid, 238, and for the equation of structure and code 238, footnote 2.

13 See chapters 2 and 3 in Kay 2000.

universal – thus, one that is principally the same in all known living beings – seemed to make it possible finally to decode the 'book of nature' (another, though earlier, metaphor).

Such ambitious ideas also took hold in French structuralism and especially the structural analysis of narrative in *Communications* no. 8. In his search for universal structures Barthes dissolved the boundaries of narrative both temporally and spatially, and he also *naturalized* it in order to subject it to the same fate experienced by the manifold phenomena of life in the concept of the genetic code: "narrative remains largely unconcerned with good or bad literature. Like life itself, it is there, international, transhistorical, transcultural."[14] The thus prepared *fact* of narrative should be reduced to a few elements and understood in analogy to the largest unit of linguistics, the sentence: "a narrative is a large sentence, just as any declarative sentence is, in a certain way, the outline of a little narrative."[15] Thus, only now, after the preparation of the object of knowledge by means of generalization and structural reduction, does Barthes identify elements and rules. While all the theorists in *Communications* refer to slightly different elements, all adhere fundamentally to the concept of a linguistic sign and to grammatical categories of the sentence and verb conjugation in linguistics. In Genette's case this orientation leads – in the elaboration of his narrative theory in *Discours du récit* (1972) – *en passant* to a rigid determination of the *direction* of the narrative and thereby to the allocation of a dimension. In its written form (here, Genette partly revokes Barthes's forgetting of the "vehicle") narrative thus belongs to an order of successivity; that is, it should be understood as a coded sequence of signs, and prescribes a diachronic reading. The dimension of written narrative is linearity (*dimension 1*), and its measure is found in the time of reading. Hence, narrative

> "can only be 'consumed,' and therefore actualized, in a *time* that is obviously reading time, and even if the sequentiality of its components can be undermined by a capricious, repetitive, or selective reading, that undermining nonetheless stops short of perfect analexia: one can run a film backwards, image by image, but one cannot read a text backwards, letter by letter, or even word by word, or even sentence by sentence, without its ceasing to be a text. Books are a little more constrained than people sometimes say they are by the celebrated *linearity* of the linguistic signifier, which is easier to deny in theory than eliminate in fact. [...] [P]roduced in time, like everything else, written narrative exists in space and as space, and the time needed

14 Barthes 1975, 237.

15 Ibid, 241. Literature is equated by Barthes with language and only as a consequence of this equation can linguistic analysis serve as a model for a universally valid analysis of narrative. Fundamental for such an analysis of narrative oriented to linguistics is then the code, which means that in the narrative nothing is accidental, but everything coded and therefore explainable via structure or organization.

for 'consuming' it is the time needed for *crossing* or *traversing* it, like a road or a field."[16]

Thus, for Genette written narrative exists in three-dimensional space, but is itself strictly one-dimensional, and precisely in this way available to a structural analysis, insofar as the stream of text (a string of linguistic signs) relates to universal laws of language. Such equations of writing and linearity, which are typical for structuralism, were criticized by Jacques Derrida in *De la grammatologie* (*Of Grammatology*) already in 1967 (thus, a year after the papers in *Communications* no. 8 and five years before Genette's elaboration of his narrative theory). Derrida's neostructuralist position introduces historical relativizations and philosophical subversions into the structuralist analysis of speech and writing.[17] In his project of a liberated "science of writing – *grammatology*" (writing understood in a general sense as inscriptions of all kind, and thus as *grammè* or graphs), he traces the "false evidence" that determines the long history of writing.[18] This includes particularly the orientation of writing to spoken language and a model of presence, since this orientation leads to a focusing on a *phonetic writing* and overlooks other forms of writing (ideographic writing, knot writing, etc.), or entails the degradation of cultures "said to be 'without writing.'"[19] Also the "production of the linear norm" (for which Genette is responsible in an exemplary way, but not alone) is for Derrida the expression of an approximately four-thousand-year-old ideology that should be corrected in the proposed science of grammatology via a liberated and radicalized concept of writing by among other things invoking the pre- and parallel histories of nonlinear writing.[20] Derrida's critique outlines something that could be described with Abbott's words as "dimensional prejudices" – namely, an absolutized linearity of writing (and its unreflected relation to a conventional concept of temporality). The supposed universality of linear writing is countered by Derrida with its historical relativity: "The 'line' represents only a particular model, whatever might be its privilege. This model has *become* a model and, as a model

16 See Genette 1980, 34 (unless otherwise noted, emphasis in the original). Here, Barthes is more cautious and combines the analysis of the syntactic order of the sentence with the consideration of a paradigmatic order (in the sense of linguistics: syntagmatics and paradigmatics), which undermines the linearity of the stream of text in the narrative. See Barthes 1975. For the usual equation of writing and alphabetic writing and finally linearity, see a recent publication on the history of writing and the book, Funke 1992, 13–28.

17 Structuralism (e.g. Todorov, Genette, Barthes) and neostructuralism (e.g. Derrida, Michel Foucault) do not only overlap temporally, but are also to be understood content-wise as networked and complementary positions – the term poststructuralism masks this connection. See Dosse 1991–1992.

18 Derrida 1976, 4 and 81.

19 See ibid, 83: "Actually, the peoples said to be 'without writing' lack only a certain type of writing. To refuse the name of writing to this or that technique of consignment is the 'ethnocentrism that best defines the prescientific vision of man.'"

20 One of the representatives of this writing ideology criticized by Derrida is the linguist Ferdinand Saussure (see ibid, 86).

it remains inaccessible."[21] In the course of his deconstruction of phonetic writing, he not only reconstructs the history of this ideology, but also recalls those elements that constantly endangered the linear norm, including the "discreteness" and "spacing" resulting from the respective storage media.[22] These moments of crisis of linear writing should now – beyond Derrida – be explicitly taken up again by describing the material condition of writing (and narration) in the book: that is, the two- and three-dimensionality of writing in codex and bound book neglected by structuralism.

Dimensions 2 and 3

If one wants to illustrate the hypostatization of linear writing criticized by Derrida with a book medium, then the bound book produced since the 15th century is not strictly speaking the best choice. It seems more appropriate to illustrate linearity with media such as Egyptian, Greek, and Roman scrolls, which – after the appropriate material (papyrus or leather) had been found – with their maximum length of roughly six meters (a book format of the time; today more like a chapter) permitted the writing down of corresponding text lengths, and due to their rolling technique prescribed a relatively clear reading direction. Other material supports such as clay shards or tablets made possible mostly only shorter entries, or had to be provided with short inscriptions along the lower edge (colophons) to indicate their relation to a larger set of tablets. The codex developed out of the wooden (or wax) tablets that already could be bound with leather straps to form diptycha, triptycha, or polyptycha, so that the writing material (papyrus, parchment, and, after the 11th century when it was imported to Europe, also paper) was no longer glued together to form a roll, but folded after the model of polyptycha to form a *section,* so that subsequently a number of sections could be bound together. That increased manageability by making it possible to include longer manuscript texts and entries in one codex.[23] The beginning of the use of paper in western Europe in the 11th century, the production of paper beginning in the 13th century, and finally, beginning in the second half of the 15th century, the invention of printing with type, which with the invention of new type-casting methods became easier to produce, led to a considerable acceleration in book production. According to current research on the history of the book, for the second half of the 15th century one can suppose a total production of approximately 15 million

21 Ibid. On the binding of the linearity of language and writing to "this vulgar and mundane concept of temporality (homogeneous, dominated by the form of the now and the ideal of continuous movement, straight or circular)," see ibid. This concept of time rejected by Derrida is at the basis of Genette's remarks on the temporality of reading.

22 Ibid.

23 On the history of the clay tablet, scroll, and codex, see Funke 1992, 66–71. On the success of the codex, see ibid, 70. Editions of the Bible are known in codex form already in the 1st century; editions of Homer and Virgil date from the end of the 1st century; from the 4th century onwards the codex gradually replaced the scroll.

books – however, mass production in the modern sense only arose with the invention of paper machines, folding machines, typesetting machines, industrial type-casting methods, and high-speed presses at the beginning of the 19th century.[24]

As a storage medium for longer texts the codex does not immediately align itself with the scroll. On the one hand, the continuous format of the scroll is now divided up into square and, later, rectangular pages, which present a specific quantity of text as in a frame. This type of discrete page is partly anticipated in the scrolls to the extent that here the text is entered in columns whose line length is initially oriented to the form of the Greco-Roman hexameter, so that not only each column, but already each line can be understood as a verse, and in this way as a discrete unit (to which always the next line or column is linked). However, the single page in the codex is not oriented to a metric form, but determined only by the storage medium itself, which interrupts the continuity of the text. Furthermore, the length of the texts in a codex can be much longer than in a scroll, so that the connection between the pages in some circumstance has to continue over a considerable length of text. Thus, while the two-dimensional presentation of text in the scroll with its line and column breaks can be seen as a minor disruption of the linear stream of text, for the codex the two-dimensional presentation of the text on the page is grasped more discretely; and in addition through the folding of the paper and the binding of the resulting sections a third dimension becomes noticeable that decisively alters what can be treated in writing (narratives, laws, science, history, etc.) by grasping this spatially. The discrete pages and the spatial sections of codex and book prevent a strict linearity of the text; or formulated against the background of the structuralist discussion on dimensions, in codex and book the one-dimensionality of writing is supplemented by two- and three-dimensionality. This increased dimensionality of the book medium is made possible by a practice that initially remains external to the text: the folding of the sheet of paper. While wooden tablets have to be bound together using leather straps and thus simply added, the wondrous proliferation of the textual space in codex and book is the result of a multiplication: that is, a single or repeated folding of the sheet of paper to create formats of different sizes (customary is a threefold folding of the sheet to produce 16 pages; see fig. 1). The folded sections can then be combined using different binding techniques (sewing and/or gluing) to form extensive codices or books, and are subsequently trimmed at the edges so that the continuous fold of the paper at the unbound but folded outer edges is interrupted to create a sequence of pages that can now be leafed through. Folding and trimming thus bring about a two- and three-dimensionality of the text in codex and book, and such a bound collection of sheets finally became a full totality when after the mid-15th-century printing facilitated and even provoked the creation of longer texts; now long textual narratives became quasi-mechanically their own worlds.

24 See ibid, 113, and on industrialization 189–199.

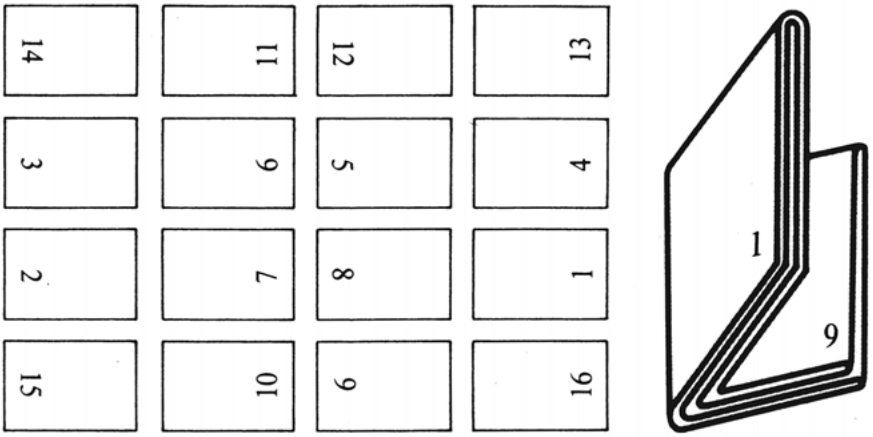

Fig. 1: A current example of a 16-page imposed forme. After being folded in the folding machine, the pages are arranged in the correct sequence. (Drawings by Bernhard Laufer).

In the historical vocabulary of the book manufacturer the fundamental significance of the transition to *dimension 3* produced by the folding of the sheet of paper has been retained to the present day. In the German-speaking world the proper arrangement of the pages on a sheet of paper, which ensures that the correct sequence appears in the book after folding, is called *ausschiessen* (imposition). In the etymological volume of the *Deutsches Wörterbuch von Jacob und Wilhelm Grimm* one can read that the verb has several meanings, whereby the transitive "einen Wald ausschieszen" (to shoot all wildlife in a forest) surely comes closest to the economical utilization of the sheet (with no leftover space).[25] Nevertheless, one should also consult an intransitive usage, since *ausschiessen* in the sense of *prosilire, exsilire,* and *progerminare* (and still more frequently *schieszen* [to shoot]) is also used in relation to plants, and signifies for instance the burst of growth in spring, when "die bäume ausschieszen" (the trees put out their shoots).[26] Accordingly, there is an abrupt change in which the plant, suddenly and profusely, puts out new shoots. This remarkable plant growth can be compared with the folding of the paper sheet, since in effect the threefold fold of a single large sheet after trimming leads in one stroke to a 16-page section – the book could be said to burgeon.[27]

25 Grimm 1991, vol. 1, cols. 948–949, here col. 949.

26 Ibid.

27 Drawing on Barthes's formulation that narrative like life is simply "there" (cf. above in the main text), one could say – with regard to the current state of knowledge on the fundamental importance of protein folding for the development of living organisms – that in the eyes of book manufacturers the pages of the folded and trimmed book are suddenly there, like life.

Also the German term for folding, *Faltung* (or *Falzung*), which book manufacturers employ for this operation, contains revealing historical connotations. Thus, for bookbinders the technical term *Falz* (fold) means historically "das brechen, zusammenlegen, falten der gedruckten bogen" (the breaking, arranging, and folding of the printed sheet), and thus includes not only the folding and assembling, but also the "breaking," which means the term implies a discontinuity.[28] As a result of the assembling, the *Faltung* also creates a split, which is why the word *falte* (fold) historically also includes the old meaning of an "abgelegenen, eingehegten raums" (remote, enclosed space).[29] These historical meaning variants of *ausschiessen* and *falte* already shed light on the new praxis of reading demanded by the extended textual space of codex and book. Since, in contrast to the scroll, the bound book allows and provokes a leafing back and forth, and thus a looking ahead and back, or a random perusal of the book. Each time one turns the page in the continuous sequence of pages (shown concretely by the page numbers), what was hidden now emerges in the space between the sheets, and can be read on the opened page. At the same time, each turning of the page can be deployed and understood as a break, since from here one can leaf to any other part of the book, and thereby create a new relation. Thus, the successivity of the narrative emphasized by Genette is replaced in the practice of reading by a network-like relation between different parts of the narrative, since a narrative stored in a book can indeed be read backwards or in a crisscross fashion or even only in extracts.[30] In practice the discontinuous reading suspends the alleged linearity of the text, and it can do this with such ease because the material organization of the book (discrete sheets or pages) enables this. Although the fold in the paper first brings about the book as totality (in the sense of a whole world), the same fold leads the reader to fragment this totality through reading and to disrupt the predetermined order.

Book manufacturers were aware that the folding and binding of the sections did not only mean continuity, multiplication, and totality, but also contained the danger of discontinuity and confusion. The problem regarding the imposition (*ausschiessen*) of the sheet of paper was then also to ensure the proper arrangement of the pages to be printed, so that in the folded, bound, and trimmed book the pages appeared in the right sequence (and also that the grain of the paper was parallel to the spine making the pages easier to turn).[31] Today, this arrangement is carried out by an algorithm; however, up to the 20th century it was common practice to insert the pages into a chase divided according to the

28 Grimm 1991, vol. 3, cols. 1302–1303, here col. 1303.

29 Ibid, cols. 1297–1299, here col. 1298. Other meanings of *falte* are *umschlingung* (intertwining), *gefaches* (dividers/compartments), and *tasche* (pocket), and naturally the *falte* in a garment, or in the figurative sense "falte des herzens, der sinne." (fold of the heart, the senses). Ibid.

30 At least if one does not take the string of characters as an absolute criterion (as Genette does), but starts from units such as page, chapter, and paragraph, while also considering reading and writing practices.

31 On the problems of the division of the page and folding, see Diderot/d'Alembert 1751–1780, vol. 29, Imprimerie en caractères, Planches VI–XII (and the descriptions in ibid., 3–7); Febvre/Martin 1979, 68–71; in relation to the present, Laufer 1988, 65–71.

number of pages and folds (see fig. 2), and to make a trial pull, or else to print the pages individually, to paste them onto a sheet of paper, and to fold this to make a test copy. Without making such tests, the result of the folding would be uncertain; which means that with a defective arrangement after printing and folding, while the linearity of the text is formally preserved (as a mere string of characters), the meaning of the text is disrupted.

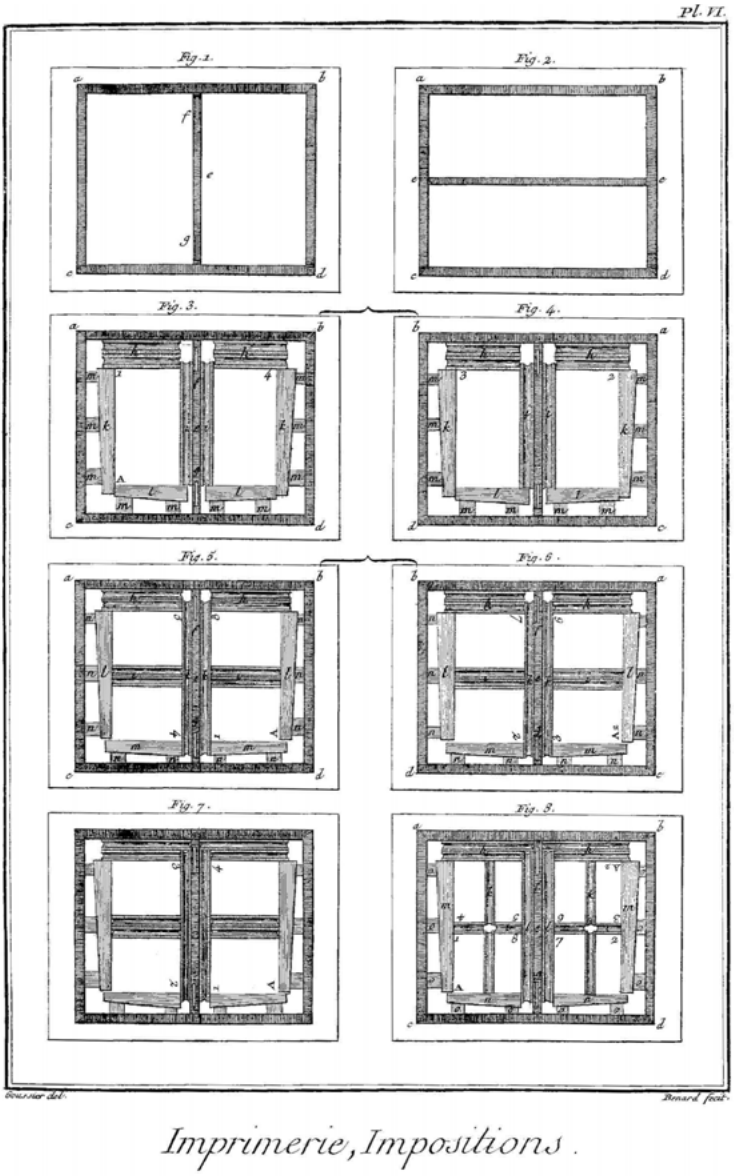

Fig. 2: The illustration from the plates section of the *Encyclopédie* of Diderot and d'Alembert shows a few simple examples of the numerous possible divisions of the page in the chase. In the 18th century different divisions were selected depending on the type of paper, folding, and binding.

Of course, the danger of discontinuity linked to the fold can also be made productive. In the 1960s the American writers William S. Burroughs and Brion Gysin took printed books (by other authors), folded the pages down the middle, and arranged the two halves of the page in such a way that a new page with a now hybrid text resulted. This creative writing method propagates a *folding of folding* that at first glance retains the linearity of the text, but de facto disrupts and transforms the cohesiveness of the text.[32]

Fundamental for the printed, folded, and bound book from the 15th to the 21st century is therefore not the one-dimensional text, but the spatializing folding, which variably links continuity and discontinuity, and from the *splitting* of the sheets (i.e. the trimming of the fold) allows a world to arise. In this formulation of the book and the corresponding reading techniques, the text is at least three-dimensional.

Many Dimensions

In *De la grammatologie* Derrida declared the four-thousand-year-old ideology of linear text to be concluded, and in this he included the book: "The end of linear writing is indeed the end of the book, even if, even today, it is within the form of the book that new writings – literary or theoretical – allow themselves to be, for better or for worse, encased."[33] For his diagnosis of the end Derrida draws on the investigations of André Leroi-Gourhan, who in 1964 and 1965 published the volumes of *Le geste et la parole* (*Gesture and Speech,* 1993) on language and operativity. Here, the anthropologist recalls those epochs of writing in which writing was not organized according to a linear schema, but operated in a multidimensional way, and thereby constituted a correspondingly multidimensional thought. At the same time, however, Leroi-Gourhan also announces a new development, which he describes as a liberating "return to diffuse and multidimensional thought."[34]

32 A comparatively conventional result of this experimental project is the publication *The Third Mind* by both authors from 1978.

33 Derrida 1976, 86. Twenty years later he would revise this estimation in *Le Livre à venir* (*The Book to Come*; an introduction to a discussion with Roger Chartier and Bernard Stiegler that took place in 1997 at the BnF in Paris), where he takes up again the question of the book and here ascribes to it a long life, one that is, however, subjected to considerable transformations through the material, technical, and social practices associated with it. The revolution of the book that he considers here is digitalization, which exposes the book to a changed support and changed conditions. As a result, especially the book as *totality* is abandoned (instead, tension between "gathering" and "dispersion") as is the finalized book (the folded and printed book effectively stops and substitutes the writing process of the author). However, he already sees this model of the book announced in Mallarmé's *Un coup de dés.* See Derrida 2005, 13. In this book Derrida only briefly comes back to his remarks in *De la grammatologie.* In his earlier diagnosis of the *end of the book,* he sees the discussion on the book in the digital age already implied. With end, however, he means in retrospect simply the *end of the codex-book*. See ibid, 14f.

34 André Leroi-Gourhan, *Le geste et la parole* (1965, vol. 2, 261–262), here quoted in Derrida 1976, 332f., footnote 35.

And Derrida confirms the significance of this turn that should end the "age of the sign" and linearity: "What is thought today cannot be written according to the line and the book, except by imitating the operation implicit in teaching modern mathematics with an abacus."[35]

Surprisingly, Leroi-Gourhan and Derrida's diagnosis was sparked by two phenomena that could also be claimed by the proponents of a linearity of writing. For the anthropologist it is magnetic tape and the Dictaphone that has put an end to the dominance of the linearly organized textual space in the book; it is therefore a storage of spoken language (which served as the basis for the phonetic writing and presence model criticized by Derrida) that is evoked here as the return of many dimensions. Derrida, on the other hand, refers to the phenomenon of *program* or *genetic inscription,* since here writing has no *anthropos* and no intentional consciousness as a *source* and point of reference, but can vouch for the radicalized understanding of writing outlined in *De la grammatologie*. Accordingly, the genetic inscription attests to a "history of the *grammè*" in which the possibility of human writing as human unity in general will have been a mere "stage or an articulation in the history of life."[36] To the extent, however, that particularly genetic inscription might be understood also as evidence of a universality of the writing paradigm, it is still possible to detect with regard to Derrida an interface to the ideology of linear writing.

However, a three-dimensional writing (and a corresponding thought) can also be observed before the invention of magnetic tape and Dictaphone, and this applies beyond the practice of reading. The printed and folded book is accompanied by another writing practice insofar as the finalized book is eventually chopped into parts again through reading and excerpting, and these parts can be recombined by means of writing to form a new entity. Decisive for this is the invention of the card index, which encourages this reading and writing activity. In the 16th century scholars such as the polymath Konrad Gessner attempted to filter their reading by excerpting the text on small pieces of paper – the precursors of index cards – and in this way to channel these excerpts in a new direction from a particular perspective. Thus, through reading, the totality of the book is broken into pieces, the searched for passages recorded on discrete paper formats (excerpted), and then in further acts of reading and writing (in some cases initially in the form of additional notes, also on index cards) combined to form new connections from which a new book might arise. The three-dimensional card index (folders, cases, boxes, or whole cabinets with draws for the cards) brings these notes into a constellation that can be differently organized (according to area of knowledge, the subject, or idiosyncratic perspectives)

35 Derrida 1976, 87. On the "age of the sign" as an ideology, see ibid, 14. See also Barthes's cautious relativization of the structuralist claim to universality, when in his text *Sémiologie et Médecine* from 1972 he likewise asks about a possible "ideology of the sign." See Barthes 1988, 212. Historical relativity and the diachronic level returned to structuralism at the beginning of the 1970s.

36 Derrida 1976, 84.

and thereby from book reading to book reading gradually expanded and altered. Unlike in a book, however, index cards are not placed in a fixed and closed succession, but like playing cards retain a fundamental mobility (they can be repositioned and expanded) as well as the potential of recombination (insofar as the individual cards can at any time be recombined to form new relations).[37]

While in his experiments with systems of note taking, Gessner basically still follows the idea of a topical, sorted, and closed order of knowledge, one that is not oriented to originality and innovation, since the modern period in philosophy, the sciences, and the arts, an awareness formed for the eventful, human-made *new* which leads to the desire for its repetition.[38] This search for innovation is reflected in all areas of culture and leads eventually to a radical temporalizing of scientific, philosophical, artistic, and technological production – the horizon of knowledge is *open*. Under these conditions the card index developed into a favored means of administrating the increasingly vast knowledge of the accelerated book production and to create the sought-after new knowledge. At the same time, the practice of note taking is gradually differentiated into a diversely characterized, but also increasingly theorized method, so that at the beginning of the 20th century it was propagated as a universal technique, and the production of card indexes could be standardized.[39] The card-index method now fulfilled administrative tasks in bureaucracies, accounting departments, and libraries, but also characterized the writing processes of scientists and artists (see fig. 3), before being replaced everywhere by computers and the possibilities offered by these.[40]

37 See Krajewski 2011; Zedelmaier 2002.

38 On this change, see Blumenberg 1996. On the relation between card index file and evolution of knowledge, see Kammer 2009.

39 Here, writing with the help of the card index follows the method of scholarly excerpting (selection, summary, sorting, and storage), which it effectively radicalizes. On these principles of scholarly note taking, cf. Blair 2004. Note taking is initially subordinated to excerpting and theorized and professionalized as an independent technique only late. In the 18th century the technique becomes evident among other places in the descriptions of the jurist Johann Jacob Moser, to which the writer Jean Paul refers in his own practice of note taking. There are also early warnings of the dangers of the card index, for instance that this form of note taking (*Verzettelung*) leads to a getting lost in the details (*sich verzetteln*), and thereby no longer leads to the production of cohesive texts.

40 Among *scholarly* users of card index files of the 20th century one could name Roland Barthes, Michel Foucault, Hans Blumenberg, Niklas Luhmann, Arno Schmidt, and many others. For illustrative examples, see the exhibition catalogue of Gfrereis/Strittmatter 2013. On the order and use of the card index in the writing practices of Blumenberg, Luhmann, and Schmidt, as well as the related book production, see Krauthausen 2013.

Fig. 3: The photograph by Friedrich Forssman shows part of the vast card file (approx. 120,000 small pieces of paper) that the writer Arno Schmidt created in the 1960s for his novel *Zettel's Traum*.

The meaning of this writing practice, which accompanies the printed and folded book, was elucidated in 1928 by Walter Benjamin, when he notes that the "card index marks the conquest of three-dimensional writing."[41] The philosopher's remark makes reference to the spatial dimensions of the furniture that the card index concretely is, and that conditions it both materially and as medium, insofar as the mobile three-dimensional correlation of the index cards expands the dimensionality of writing.[42] What counteracts the linearity of writing in this case is not only the caesura brought about by a new medium, but a changed practice of reading and writing, which in turn is made possible by the changed material disposition of the book.

What, however, can be concluded from this description of the many dimensions of writing in the book and card index? Basically, a relation to the book as set out by Derrida against the background of his diagnosis of the end of the book:

41 Benjamin 1979, 62. Benjamin refers explicitly to the fact that at other times and in other cultures three-dimensional textual media had already existed, for instance in runes and knot writing.

42 If one considers the mobility of the cards and the open-endedness of the card index, then one should also add the temporal dimension. Accordingly, the card index would establish a four-dimensional writing.

> "It is less a question of confiding new writings to the envelope of a book than of finally reading what wrote itself between the lines in the volumes. That is why, beginning to write without the line, one begins also to reread past writing according to a different organization of space."[43]

In this sense, it is praxis that breaks open the (structuralist) ideology of the linearity of writing. And it should be added that, strictly speaking, this had long been carried out by praxis: on the one hand, insofar as the practice of folding the paper sheet contained the possibility of many dimensions of writing; on the other, insofar as the accompanying practice of a discontinuous and spatializing reading (or such a writing) realized a potential inherent to the material conditions.[44]

Translated by Ben Carter

43 Derrida 1976, 86.

44 See in this connection also Barthes's considerations on the meaning of praxis, since this escapes the endless chains of signifiers of (clinical) signs and establishes a meaning through simple hermeneutics, which then determines the further operating. Barthes 1988, 210.

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