

# LITERARY MACHINES MADE IN GERMANY. GERMAN PROTO-CYBERTEXTS FROM THE BAROQUE ERA TO THE PRESENT

---

*Jürgen Schäfer*

Espen Aarseth and his followers have repeatedly pointed out and proved with many examples that their theories of cybertext and ergodic literature are focused on the mechanical organization of text and on the actions of users/readers on a broad and general level; they are not limited to texts in computer-based media. It is, however, evident that computers are particularly well suited for elucidating the main features of cybertexts. If we agree with Aarseth that there are no fundamentally divergent attributes to texts in computer-based and in print media, we need to find answers to two fundamental questions. Firstly what impact do various media of production, transmission and reception have on literature; in other words: what is the pivotal difference between the syntagmatic strings of signifiers of a printed text and the “flickering signifiers” (Hayles 1999, 25) of computer-based media? Secondly, we need to identify the common features that allow us to talk of “literature” regardless of historically changing media configurations. Both issues require a thorough description of the history of proto-cybertexts. The following – necessarily brief – survey of four centuries of German literature attempts only to give an overview to a more comprehensive picture, which this Yearbook’s articles will present.

*From language to cybertext*

In order to answer these questions, we inevitably need to focus on the tension between the letters of literary texts and media technologies. The German media theorist Hartmut Winkler has brought forward a very interesting idea in his recent papers on the internal economy of the media, which is worth pursuing. He regards language as a basic

social *technology* that “intertwines acts of inscription/depositing with speech practices” (Winkler 2002, 99). Winkler’s approach thus combines semiotics and technology-centered media theory by proposing two definitions of script and signs which may be surprising at first but which open up new perspectives on the relation between symbolic practices and technology. On the one hand, he adopts de Saussure’s and Derrida’s striking idea that a sign only means something by virtue of its difference from something else. Hence it presupposes some notion of transport or transmission from one context to another pointing to the metaphoricity of all language. On the other hand, Winkler stresses that signs and script are repetitive when he defines them as “machines of repetition” (transl. from Winkler 2004, 25):

The tight framework of sender and receiver is being transcended; they both are only parts of an endless chain of acts of repetition, which they can neither understand nor keep under control; insofar as signs are transmitted from one context to another, they always are telecommunication. The reason for their peculiar character is the fact that they refer to contexts, which are not available at the moment of their actualization. (Transl. from Winkler 2004, 98f.)<sup>1</sup>

Three aspects are crucial in Winkler’s approach: Firstly, semiosis has always been *technical*; secondly, it always takes place *in media* (in this sense, *all* media are devices of telecommunication, regardless of whether a distance is bridged by sound waves of the human voice, by physical transport of a book or by ‘immaterial’ wired or wireless signal transmission); and, thirdly, the logic of *transmission* is already operating in the process of sign *formation*. This means for models of communication that media are *more* than just neutral channels, tools, instruments or institutions that only get involved after the sign formation has been completed; they rather are *involved* in this semiotic process from the outset:

This means that the technical achievement of media to bridge spatio-temporal gaps moves into the core of semiotics. Signs are by no means being formed first and then transmitted afterwards. The sign rather is the bracket itself, which associates the different contexts, and technical media only execute what has always been prepared as switch of context within the sign. (Transl. from Winkler 2004, 168)<sup>2</sup>

Applying Winkler's ideas to literature, we can relate them to some categories of Aarseth's cybertext theory. Both approaches assume that there are two facets of language, which are cyclically related to each other: the paradigmatic system ("langue") and the speech acts ("parole"). Usually, these speech acts are arranged in syntagmas or signifying chains. In the special case of a literary text in a printed book, e.g., the written speech acts of an author are stored as syntagmas in a medium and then transported or transmitted to the readers via different channels. The crucial point of Aarseth's theory, however, is his idea of regarding any text in a very literal – and not only metaphorical – sense as a *machine* for the production, transmission (very much in Winkler's sense) and reception of verbal signs. This machine consists of a material medium, a user, and strings of signs that are divided into so-called "scriptons" (defined as strings as they appear to readers on some material surface) and "textons", which are "strings as they exist in the text" (Aarseth 1997, 62).

Hence such a text does not consist of one single syntagma but of two layers, which – and this is crucial – are *recursively* related to each other by what Aarseth calls the "traversal function", i.e. the "mechanism by which scriptons are revealed or generated from textons and presented to the user of the text" (ibid.). The traversal function can be described as the combination of seven variables (dynamics, determinability, transience, perspective, access, linking, user function). In our context, the user/reader functions are the most important variables: According to Aarseth, ergodic literature requires more from a reader/user than just interpreting what he reads in order to understand a text's meaning. In addition, the user needs to perform in an extranoematic sense; this means that, as Aarseth puts it, "nontrivial effort is required to allow the reader to traverse the text" (ibid., 1). These additional functions are "the explorative function, in which the user must decide which path to take, and the configurative function, in which scriptons are in part chosen or created by the user". The so-called textonic function demands from the user to add textons or traversal functions to the text (ibid., 64).

This model can provide a first approach for relating speech acts – and this includes literary texts – and technical media. The model of the text-machine, however, does not necessarily depend on comput-

ers but can explicitly be applied to all texts. Computers and networks should not be misunderstood as mere channels for the transmission of messages. They are programmable machines, which are able to process signifiers according to a program and thus generate an output that can neither be predicted nor kept under control by writers or by readers.

It is the twist of all cybernetic theories that in recursive loops *repetition* and *variation* are related in a very specific way. As Winkler argues, recursions allow the “repeated application of a processing instruction onto a variable which has already been the result of the same instruction itself. The variable value varies with each passing of the loop; but this repetition does not result in the production of identity but in pre-defined variation. Recursion thus is more than just a simple reproduction; it is rather an advanced form of reproduction, combining repetition and variation with the objective of creating something new, a result that can not be predicted in advance” (transl. from Winkler 2004, 173).<sup>3</sup>

Although the computer, which strictly separates storage devices from interfaces may be the best-suited medium for “ergodic literature” or “net literature”, it may be rewarding to have a closer look at the long history of cybertexts in non-computer-based media, especially in print media. Hence, in the following survey of proto-cybertexts, I will turn away my attention from “literary objects that are static, intransient, determinate, impersonal, random access, solely interpretative and without links” (Eskelinen 2001).

In modern literatures, it most notably was the international (though predominantly French) Oulipo group (the acronym is an abbreviation of *Ouvroir de la Littérature Potentielle*, in English: *Workshop of Potential Literature*) whose members tied in with the long tradition of combinatory literature. Raymond Queneau (1903-76), the creator of the famous sonnet-machine *Cent mille milliards de poèmes* (1961, engl. *One Hundred Million Million Poems*), explicitly regarded the constraints imposed by combinatory procedures as catalysts of writers’ creativity. He believed that they ultimately allow for a higher degree of creative freedom than any sort of improvisation:

The classical playwright who writes his tragedy observing a certain number of familiar rules is freer than the poet who writes that which

comes into his head, who is the slave of other rules of which he is ignorant. (Cited in Motte 1998, 18)<sup>4</sup>

The Oulipians were dealing with combinatorial procedures in a two-fold way: On the one hand, they investigated and reinvigorated poetic possibilities from the past; they even ironically qualified their predecessors from the Ancient world and the Baroque era as “plagiarism by anticipation” (cited in Motte 1998, 31). On the other hand, they aimed at developing additional possibilities which were unknown to their predecessors and which were to be based on latest scientific findings and technological novelties. François Le Lionnais (1901-84) described this tendency in his manifesto “Lipo” (1962) as follows:

Mathematics – particularly the abstract structures of contemporary mathematics – proposes thousands of possibilities for exploration, both algebraically (recourse to new laws of composition) and topologically (considerations of textual contiguity, openness and closure). We’re also thinking of anaglyphic poems, texts that are transformable by projection, etc. Other forays may be imagined, notably into the area of special vocabulary (crows, foxes, dolphins; Algol computer language, etc.). (Cited in Motte 1998: 27)<sup>5</sup>

The Oulipian activities play a key role in the history of ergodic or net literature, if we regard it as pre-history of literature in computer-based media. Unfortunately, Oskar Pastior (born 1927) has been the only German member of Oulipo. Although I will come back to Pastior, the paramount importance of Oulipo cannot adequately be considered here. But I will certainly come across many of their predecessors in German literature and thus keep up with Oulipo’s analytic tendency. For this purpose, I will focus mainly on three tendencies for characterizing and classifying those many literary texts and procedures in which recursive processes can be identified.

First, current text generators can be traced back to previous forms of *combinatorial literature*. In the German-speaking part of Europe numerous writers since the Baroque era were experimenting with literary forms that did not only consider a literary text a symbolic expression of a person’s subjectivity but also considered a text as determined by the level of programming and processing of signs. On

the one hand, this is reflected in the tradition of word games such as anagrams, palindromes or proteus verses, ranging from Baroque writers such as Quirinus Kuhlmann to 20th century avant-garde poets like Unica Zürn or Oskar Pastior. On the other hand it is presented in mechanical text-generating machines such as Georg Philipp Harsdörffer's *Fünffacher Denckring der Teutschen Sprache* (1651), which claims to reproduce the entire German-language word formation in a mechanical apparatus. In 20th century literature, (neo-)avantgarde writers developed a wide range of chance and/or algorithmic procedures for the production of literary texts, which were subsequently implemented into computer-based and networked media. This started off in the 1960s in various writers' groups such as Oulipo and the "Stuttgarter Gruppe" (Stuttgart Group) around Max Bense (1910-90), Reinhard Döhl (1934-2004) and others.

Secondly, *hyperfictions*, too, are not necessarily dependent on computers: If the basic idea of hyperfictions is letting the reader determine how he traverses the text by choosing from different story threads, then this is possible in all storage media in which texts can be divided into segments which are connected to each other by hyperlinks. Readers have the choice between multiple links and thus need to make decisions during the reading process. In print media, this has been done either in books such as Andreas Okopenko's *Lexikonroman einer sentimentalischen Reise zum Exporteurstreffen in Druden* (1970), Kurt Marti's *Abratzky oder Die kleine Blockhütte* (1971) or in Ror Wolf's literary dictionaries. Alternatively, the text segments can be published in loose-leaf form as has been done by Herta Müller in *Der Wächter nimmt seinen Kamm* (1993) or by Konrad Balder Schäubfellen in his various "lottery novels". The reader can either combine the text segments according to set rules or rather intuitively.

It goes without saying that man-man communication has always been possible prior to the installation of computer networks. It thus may be sufficient to point at two tendencies of *collaborative writing* rather sketchily. There have always been collaborative projects such as the parlor games of the Baroque era, the co-operative writing in 18th century literary salons or the Surrealist "cadavres exquis" ("exquisite corpses"). However, it was not until the implementation of postal systems and of technological transmission media that long-dis-

tance collaborations were to become possible, ranging from varying writers' correspondences to Mail Art or Correspondence Art projects of the 1960s and 70s, from telephone and fax performances to simultaneous communication via computer networks.

*Poetics and literary games: The history of combinatory poetry*

In his illuminating study on the non-intentional generation of artifacts, Holger Schulze has developed a multi-layer model of aleatoric games. He describes the creation of literary texts as a highly contingent process, taking place between the two poles of aleatorics/non-intentionality and intentionality. The classification on this axis is carried out according to the degrees of internal consistency of cohesion and coherence. Schulze defines "cohesion" as non-semantic and rather superficial relations of linguistic utterances on the phonological, orthographic and lexico-grammatical levels (Schulze 2000, 23) whereas coherence is only emerging on the level of semantics:

There is nothing like pure coherence – e.g. in terms of immaterial, pure ideas – as there is nothing like pure cohesion – in terms of a completely context-free operating with the material. Each specific artifact consists of patterns of coherence deriving from cohesion – and of patterns of cohesion that only become recognizable through coherence. [...] Coherence and cohesion are irrevocably affiliated with each other, so that there only is a gradual predominance of patterns of coherence or cohesion. (Transl. from Schulze 2000, 23f.)<sup>6</sup>

Consistency, Schulze's third category, defines the firmness of getting semantic coherence from non-intentional cohesive patterns.<sup>7</sup> One could argue that in a way every act of creative writing proceeds from an aleatoric game – i.e. processes which are subject to chance operations – to intentions regardless of whether a consistent text is being printed or whether a text can be altered by user actions as it is the case with cybertexts. Thus it is the major difference that in cybertexts temporary cohesions are constantly being generated so that semantic coherence can only momentarily be read into the cohesive structures. Hence the author of a cybertext does not only need to define a col-

lection of words but also a set of combinatory procedures or rules for permuting signifiers.

It is quite evident that literature has not only been confronted with the challenge of interactivity since modern computers were invented, but also that a “permanent mutability” of signifiers is a fundamental feature of *all* creative processes, which do not aim at permanent storage of strings. Both “writers” and “readers” of such texts are confronted with the “challenge of a *read and write memory*” (transl. from Chaouli 2001, 73f.).

It is certainly true that mechanical text generators are not computers in a strict sense as they are neither able to convert analog signals into universal machine codes nor do they operate as fast as modern digital computers. However, there have been some similarities between these machines as the algorithmic processing of “literary” signs has already been possible prior to the invention of digital computers. Besides, multiple writers have also co-operated via other communication channels than computer networks.

Schulze and others have systematically elaborated taxonomies, which reduce the literary diversity to only a few terms and parameters. But there is a long tradition behind these systematic categories which goes far back into the history of literature: From the *Kabbalah* to Ramon Lull’s *Ars magna generalis ultima* (1305-08), from Athanasius Kircher’s (1602-80) famous *Ars magna sciendi* (1669) and Gottfried Wilhelm Leibniz’s (1646-1716) *Dissertatio de arte combinatoria* (1666) to Queneau’s *Cent mille milliards de poèmes*, and finally to computer-based text generators there have been lots of examples, which can be traced back to three fundamental features. Firstly, there is a compact source code from which an abundance of texts can be generated. Secondly, this generation of texts requires that the processes of word and sentence formation be reproduced in a sort of micro-grammar. Finally, algorithmic procedures are used for processing linguistic signs (Cramer 2000, 3).

Any reconstruction of this tradition in German literature has to begin in the Baroque period when the idea of German linguistic primacy was introduced in poetic treatises such as Martin Opitz’s (1597-1639) *Buch von der deutschen Poeterey* (1624), Philipp von Zesen’s (1619-89) *Hoch-Deutscher Helikon* (1640) or Georg Philipp Harsdörffer’s



(1607-58) *Poetischer Trichter* (3 vols., 1647-53). The Baroque writers worked out a poetic theory in the tradition of Ancient paradigms. They did not consider the successful work of art as an achievement of creative genius but insisted upon the teachability and learnability of poetic methods and procedures. Harsdörffer claims:

Even though quite a few persons are born to create respectable art/ this art is not born with them; it has to be learned/ as everything that humans want to know. (Transl. from Harsdörffer 1647-53/1969, II: 2)<sup>8</sup>

These two aspects of combinatorics in the Baroque era had a strong impact on a variety of games in poetry such as anagrams or proteus verses and eventually led to the implementation of combinatorial procedures in mechanical text and poetry generators.

Linguistic historiography has identified three approaches of Baroque linguists for explaining the motivation of linguistic signs.<sup>9</sup> The linguist Justus Georg Schottelius (1612-76) from Wolfenbüttel was noted for his linguistic patriotism. He published a variety of influential studies on German language and literature such as *Teutsche Sprachkunst* (1641), *Teutsche Vers- oder Reim-Kunst* (1645) and, above all, *Ausführliche Arbeit von der Teutschen Haubt Sprache* (1663). This approach was based on the idea of an “ideal German” preceding any specific language use and directly expressing the true being of things. Unlike the linguistic patriots, Jakob Böhme (1575-1624) held a mystical view of language whereby there is a God-given proto-language that is of a revelatory nature insofar as God in a very literal sense creates things by naming them. Hence any linguistic acting of human beings for him only was a reconstruction of intrinsic properties of things (Hundt 2000, 49).

The linguistic universalism represented by Leibniz and others, however, is different from both aforementioned attitudes. The whole world is considered a closed system, an order of things that can be algorithmically produced and varied from a preexisting and limited set of elements. This applies both to cosmic elements from which God was believed to have created the world and to the elements of language. According to this theory, any divine acting is regarded inaccessible while language cannot represent the given order of things as congruently. Thus both Baroque linguists and poets expected to

draw conclusions about hidden organizational and creative principles either from investigations of rules of word and sentence formation or from implementation of mechanical principles into their poetic production. Thus the universalists were searching for the common grammatical structures of *all* languages, and beyond this, they were also trying to create an artificial and universal language. In his *Ausführliche Arbeit Von der Teutschen HauptSprache* (1663), Schottelius claims that any language can be traced back to a limited number of stem words, “which moisten the whole tree of language like succulent roots/ so that its little shoots, its branches and veinous twigs can spread assuredly and orderly in their unfathomable variety” (transl. from Schottelius 1663/1967, 50).<sup>10</sup> Of course, these stem words do not suffice to name things precisely. According to Schottelius, the complex structure of a language is generated by varying combinations of words from basic elements. Word stems, word-forming and inflectional morphemes can be combined quite flexibly to create new words, which exceed the habitual language use. Hence the linguistic historian Andreas Gardt claims that formed words cannot be simply considered a semantic “sum” of its constituents but “rather a set of an atom-like combination of single units” (transl. from Gardt 1994, 206).

Of course, all these metaphysical premises were to get lost due to the technological execution of combinatorial procedures. The basic principles of theories of order, however, had not been abandoned. It is according to the logic of combining that so-called “blind” words can be generated from the lexical elements. These words have no meaning but are only legitimate because they have been formed according to word formation rules. Schottelius – and this is the missing link to literature – to a good part aims at “lifting the German language far away from the German language” (transl. from Schottelius 1663/1967: 98).<sup>11</sup>

Baroque literature, this is to be kept in mind, is very much based on playful linguistic practices. But this does not mean that at the core of such games lies the imagination and creativity of a writer. There rather are hidden mechanisms at work in mannerist experiments:

Even if the poet aims at bringing new inventions to light, he can find nothing the likes of which had not been already or still is in the world. (Transl. from Harsdörffer 1647-53/1969, II, 8)<sup>12</sup>

*Rule and constraint: Anagram, palindrome, proteus verses  
and other literary games*

How closely linguistic research and literary practice were intertwined in the Baroque era can be seen in those poetic treatises mentioned above. The extensive works of Georg Philipp Harsdörffer may serve as an example for demonstrating how countless examples of rule-governed text production derive from the reflection of language. Unlike Opitz, Harsdörffer explicitly acted on the assumption that the subject matters of literature are not only to be found in the real world but also in language itself:

The invention is either brought about through the word/ or by the thing itself of which one is talking/ or from the circumstances or adequate similarities. It is the word in the first place that gives to an invention its innate sound of unknown meaning or with mixed-up letters if they include a whole opinion [...]. (Transl. from Harsdörffer 1647-53/1969, I, 10)<sup>13</sup>

Many samples can be found in Harsdörffer's eight-volume *Frauenzimmer-Gesprächspiele* (1641-49), a collection of parlor games framed by a rather simple story: Six interlocutors, three women and three men, get together in a mansion to talk about social, scientific and poetic matters – and for just having a chat. Above all, however, they are setting each other riddles or other exercises and engage in literary games. These games are an integral part of the *inventio* prior to the real creative act. As exercises, their main function is to make the words available to the poet and thus to stimulate his imagination:

We might have to consider here/ how our thoughts are bred and multiplied through poetry (like pastures by a water wheel). (Transl. from Harsdörffer 1641-49/1968, I, 164)<sup>14</sup>

The anagram is certainly the best-known genre of such a literary game. It is a word game that is based on an interplay of two levels of text that, according to Aarseth, could be called “textons” and “scriptons”: A word or a complete phrase is made by transposing the letters of another word or phrase. At first, the connection between a

signifier and a signified is dissolved, then the signifiers are rearranged – and only finally semantics comes into play because signifieds (and referents) need to be found for the newly established strings of signs. These strings are the “variable product of the combinative function – and not as a preliminary absolute, ne varietur” (Starobinski 1979, 8). Hence the anagram is a comparatively simple example of the indeterminate transformation of cohesive structures into semantically coherent statements.

For centuries, the anagram has very often been discredited as baublerie or magical practice. But there have also been periods every now and then in which it was quite popular, e.g. in the Baroque period and then again in the numerous 20th century avant-garde movements. We do not know very much about the origin of the anagram; it is assumed that it developed from magic rituals and oracles. The name anagrams of the Greek poet and grammarian Lycophron expressed the characters of persons that made them ideal for panegyric but also for polemical writing. In Jewish mysticism, the anagram was also used as method of combinatory literature. In German Baroque, it was popular as a creativity-stimulating parlor game at first, before anagrams were eventually incorporated into literary texts. Schottelius defined the anagram in his *Teutsche Vers- oder Reimkunst* as follows:

*A mix of letters or anagram* is when a letter in one or several words is put in a different place and twisted so that out of this emerges a totally different word or a totally different view. (Transl. from Schottelius 1656/1976: 240)<sup>15</sup>

For Harsdörffer, the anagram or “Letterkeer” (‘lettertwist’) was a technique of poetic invention because “like this one can move letters and bring forth a different view” (transl. from Harsdörffer 1647-53/1969, II, 17).<sup>16</sup> As a poetician, who was convinced that poetic writing could be learned, he gave detailed instructions for producing a well-done anagram:

- Firstly, it has to be written in German language and must not contain any Latin words. This was a common concern of all Baroque poets such as Martin Opitz who cited the anagram as evidence for the equality of German language with Latin and other European languages.<sup>17</sup>

- Secondly, the anagram had to be formed *numerically correct*, i.e. no letters were to be omitted. Harsdörffer thus insisted on phonological accuracy.<sup>18</sup>
- Thirdly, the anagram was to generate *semantically meaningful* verses.<sup>19</sup>
- Last but not least, Harsdörffer did not only approve of word anagrams but also allowed syllable anagrams.<sup>20</sup>

The anagrammatic method is only due to the reordering of letters, without any references to the real world. Hence the Baroque treatises contain a variety of instructions, which make obvious the causal connection between permuting letters and mechanical devices. In his *Helikon*, Philipp von Zesen gives recommendations to facilitate writing anagrams by using cardboard letters:

So that the poet, who wants to imitate this, does not have to think so much about the spelling and interpretation of the letters and names, I advise him to cut out all letters from card-games. He should take as many as are in the word, lay them down and invert them until one or several meaningful words have been created from the first, which he can use for his creation. Or, in order not to have to cut up so many card-games, and so that the godless people can keep their bible as a whole, I should like to advise him that he write down a letter on one card-game only, or on something else, and then mix them up and change them around. (Transl. from Zesen 1656/1977, 174)<sup>21</sup>

Considerations on which means and tools are best suited for producing anagrams have not only been made in the Baroque era. Oskar Pastior, certainly the best-known contemporary anagram writer, recommends various methods and exercises with subtle irony:

There are aids (carton, scissors, block-letter). There are wonderful practices and dummy runs: puzzles (especially the Swedish ones that are hand-made), reading the paper and watching TV (training legasthenics), some good authors, consciously walking with both feet (one after the other) on gravel, spoonerism, difficult timetables or specific techniques of breathing or counting. And there is the strategy “Drip standing stone hollowing” (the author here invented a word game in German with the saying “Steady dripping hollows stone”) [...] Real brainteasers, the author was virtually to disappear [...] (Transl. from Pastior 1985: 82f.)<sup>22</sup>

*The author was virtually to disappear:* This assertion, which encouraged Pastior to re-explore the possibilities of the anagram in 1985, is similar to statements from poets and poeticsians of the Enlightenment – although their conclusions were diametrically opposed to Pastior’s. In the late 17th and during the 18th century, some anagrams can sporadically be found in the works of Sigmund von Birken (1626-81), Nicolaus Grundling (1671-1729), Theodor Kornfeld (1636-1689) or Johann Christoph Männling (1658-1723). But these examples were exceptions to the rule. In general, as from the age of Enlightenment, the Baroque *ars combinatoria* was largely discredited. Instead, creativity and spontaneity became the paradigms of literary theory. The scriptural logic of letters was replaced by the phonocentrism of the Goethe era, and the anagram and other forms of combinatory poetry were discredited as baubles (“Kindereyen”) by poets and philosophers such as Johann Christoph Adelung (1732-1806) (Adelung 1782/1971, 518). The entry in Johann Heinrich Zedler’s famous *Universal-Lexicon* (1732) illustrates the loss of reputation of the anagram as literary genre:

There is hardly any benefit to this and the pleasure derived from it will only be found by feeble spirits, who like to spend their time with trivialities. The good taste of our scholars today has long exiled these activities and the satirists have already ridiculed them. [...] We believe that the best anagrammatist could be a confused head, who is not distracted from his diligent work by its baseness. (Transl. from Zedler 1732, 28)<sup>23</sup>

The anagram was only rediscovered by the 20th century avant-garde movements. Dadaists and surrealists were interested in the procedural logic of the anagram, which resembles surrealist ideas of an automatism of language. Whereas the popularity of the anagram in the Baroque era was due to the prospect that the secret order of things may be discovered by permuting signifiers, its modern renaissance is due to the expectation of getting access to the unconscious by the play of letters. Talking of a rediscovery does by no means indicate that the historical avant-garde of the 1920s made extensive use of the anagram. However, there is a strong link from Dada and Surrealism to the experimental literature and arts of the 1960s. One of these links is the work of the artist Hans Bellmer (1902-75) who became famous

for his sculptural construction *The Doll*. Bellmer relates his breaking up and rearranging of the female body to the anagrammatic practice of language (Gendolla 1992). He argues that the doll’s body has been born “from division, subtraction and multiplication but also from this permutability, which mathematicians call ‘permutation’ and philologists call ‘anagram’, and whose meaning adds up to the following: The body, it resembles a sentence inviting us to break it up into its constituent letters, so that these again connect with what they contain in an endless array of anagrams” (transl. from Bellmer 1976, 95).<sup>24</sup>

Unica Zürn (1916-70), the longstanding partner and lover of Bellmer, is considered to be the most important anagram writer of German post-war literature. From 1953 to 1964, she wrote as many as 123 anagram poems without using cardboards or other devices; she only worked on paper, as can be seen from her “Der Geist aus der Flasche [IV]“ (“The Spirit from the Bottle [IV]”, 1960). First, she wrote down the first line from which she then crossed out the letters of the emerging words. She repeated this process until she succeeded in writing a new line (fig. 1):

Schlage das Ruder, feiste  
 Sau. Der Drache sieg’l fest  
 Die Frau, das Segel rechts  
 Leg’ aus. Der erste Fisch! Da  
 Faucht der Adler: giess’ es,  
 das Feuchte lass der Gier.

(Zürn 1988: 86)

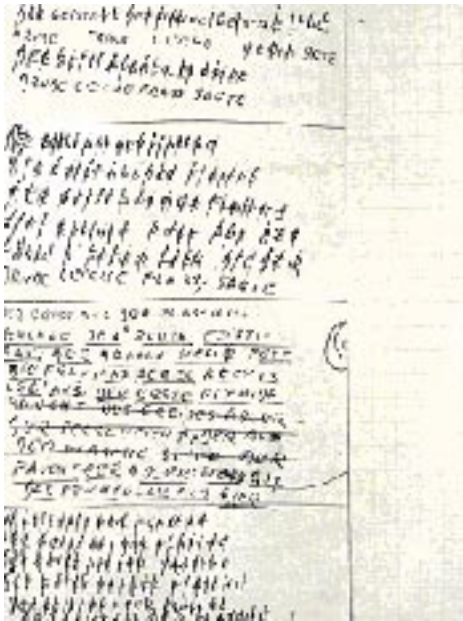


Figure 1. Facsimile from Unica Zürn’s notebook.

In the 1980s, German literature saw a sort of boom of the anagram initiated by writers such as Oskar Pastior or Elfriede Czurda who published entire books of anagrams. Following the Oulipo theories, Pastior considers his texts test arrangements in which he applies both self-invented rules and models from the history of literatures. He describes his basic principle as “cracking of words and phrases into chunks of meaning of undefined size (a molecular cracking so to speak) and then joining them together in somehow startling but in their exotic way convincing new semantic connections” (transl. from Pastior 1994a, 40).<sup>25</sup> He regards his anagrams as a “permutative and very strictly meshed alchemy of letters (a sort of inframolecular cracking)” (transl. from Pastior 1994a, 40).<sup>26</sup> Hence the anagram was well suited as a “super-metaphor” for the processing of literature, for “something that neither stops nor continues” (transl. from Pastior 1985, 9).<sup>27</sup> In his *Anagrammgedichte* (1985), he took the titles of calendar stories from the table of contents of an edition of Johann Peter Hebel’s complete works as first lines of his anagrams:

Unverhofftes Wiedersehen  
 Sehr oft wird Vene, ehe es fundiert,  
 frueh von Wehes Senfe in des Heftes Heu  
 verworfen. Es fuehrt es Hefe-Vorwinden  
 sehr diffuse vor. Wen Teehenne vorsieht,  
 der fuenf Sehwesten oder Hufweisen  
 fehverweist. Von Fehes Duerfen her  
 verseift Fernsehen, wo duester Huf  
 es feindverwoehne. Huste, Revers – nen  
 Wiedehoff!  
 (Pastior 1985, 45)

Pastior and Czurda are only two representatives of the short-lived renaissance of the anagram in the 1980s. Other writers who have rediscovered the genre since then include Liesl Ujvary (*rosen, zugaben*, 1983), André Thomkins (*Gesammelte Anagramme*, 1987), Kurt Mautz (1911-2000, *Augentest*, 1979; *Ortsbestimmung*, 1984), Brigitta Falkner (*Anagramme, Bildtexte, Comics*, 1992) or Michael Lentz



(*Neue Anagramme*, 1998). In 1988, the literary magazine *Freibord* organized a symposium on the anagram, and in 1989/90, the *Schreibheft* initiated a collaborative writing project under the title *Das Rosenbaertlein-Experiment* (Kühn 1994).

The *palindrome* is a special case of an anagram defined as words, phrases, verses or sentences that read the same backward or forward. Verse palindromes were known as early as the Middle Ages, e.g. in the works of Walther von der Vogelweide, Gottfried von Strassburg or Peter Suchenwirt, in the Baroque era e.g. in texts of Zesen and Schottelius, and even some Modernist writers such as the Expressionist Georg Trakl (1887-1914) composed palindromes. It is not surprising that Oskar Pastior devoted a complete book to the palindrome entitled *Kopfnuß Januskopf* (1990). Further palindromes can be found in *Contra-Texte* by Reinhold Koehler (1919-70), in Herbert Pfeiffer's OH CELLO VOLL ECHO (1992) or in fascinating text-image palindromes by Brigitta Falkner (*TobrevierSchreiverbot*, 1996; *FABULA RASA oder Die methodische Schraube*, 2001).

*Proteus verses* – named after the Greek sea-God who could change his shape at will – vary the elements of a verse in any combination. Only the positions of the first and last words of each line are unchangeable, so that a multitude of verses can be generated by permuting the elements either in horizontal or in vertical direction. In Germany, proteus verses were only known as from the Baroque period when they were discussed in any major poetic book. In 1657, Stanislaus Mink von Weinsheun – a (slightly incorrect) anagrammatic pseudonym of Johann Justus Winkelmann (1620-99) – published an entire book under the title *Proteus. Das ist: Eine ungläubliche Lutznützliche Lehrart / in kurzer Zeit ohne Müh Deutsch= und Lateinische Vers zumachen / auch einen Französischen und Lateinischen Brief zu schreiben (Proteus. This Is An Unbelievably Useful Way of Teaching How To Rhyme Verses In German And Latin In A Short Time And Without Troubles And Even Writing French And Latin Letters)*, which was entirely dedicated to the proteus verse and to permutation of language. In his *Poetischer Trichter*, Harsdörffer gives the following definition of the proteus verse or “Wechselsatz”:

One could call this way of creating poetry a jumble-sentence: if you keep the first words and the last two unchanged in the same place/ the

other words could be mixed up 39916800/that is/ thirty-nine thousand times one thousand/ nine hundred and sixteen thousand/ and eight hundred times changed, for which change the most learned writer who would write 1200 lines daily would need 91 years and 49 days. But if one would also mix up the rhymes “Fleiß” (diligence) and “Preis” (price) and use “Krieg” (war) and “Sieg” (victory) instead one can mix up words several thousand times more. (Transl. from Harsdörffer 1647-53/1969, I, 51f.)<sup>28</sup>

The proteus verses of Quirinus Kuhlmann (1651-89), one of the most illustrious characters of his age, are of special importance in German Baroque literature. (Kuhlmann believed himself to be a prophet and thus traveled through Europe in order to establish God’s empire on earth and to father a “new Jesus”. He was prosecuted and finally burnt at the stake condemned as a heretic.) For Kuhlmann, the proteus verse has the function to illustrate the volatility of being. In his *Geschicht-Herold* (1672), he argues that all human abilities were “poured” from divine wisdom and that both heaven and earth are operating like a “changing wheel”:

The almighty creator of heaven and earth has created heaven and earth like a changing-wheel and used beings instead of the change-words. All things on earth change; all love, all hate. (Transl. from Kuhlmann 1672, §21; cited in Neubauer 1978, 32)<sup>29</sup>

If it was the case that “nature anagrammatizes” (“di Natur anagrammatisiret und buchstabenwechselt”), this must be reflected in language, too. Kuhlmann wrote the best-known proteus of the Baroque period, “XLI. Libes-kuß: ‘Der Wechsel Menschlicher Sachen’” (41st kiss of love: ‘The change of human matters’):

*Auf* Nacht / Dunst / Schlacht / Frost / Wind / See / Hitz / Süd / Ost /  
 West / Nord / Sonn / Feur / und *Plagen* /  
*Folgt* Tag / Glantz / Blutt / Schnee / Still / Land / Blitz / Wärmd / Hitz /  
 Lust / Kält / Licht / Brand / und *Noth*:  
*Auf* Leid / Pein / Schmach / Angst / Krig / Ach / Kreutz / Streit / Hohn /  
 Schmerz / Qual / Tükk / Schimpf / als *Spott* /  
*Wil* Freud / Zir / Ehr / Trost / Sig / Rath / Nutz / Frid / Lohn / Schertz /  
 Ruh / Glükk / Glimpf / stets *tagen*.

*Der Mond / Glunst / Rauch / Gems / Fisch / Gold / Perl / Baum /  
 Flamm / Storch / Frosch / Lamm / Ochs und Magen  
 Libt Schein / Stroh / Dampf / Berg / Flutt / Glutt / Schaum / Frucht /  
 Asch / Dach / Teich / feld / Wiß / und Brod:  
 Der Schütz / mensch / Fleiß / Müh / Kunst / Spil / Schiff / Mund /  
 Printz / Rach / Sorg / Geitz / Treu / und GOtt /  
 Suchts Zil / Schlawf / Preiß / Lob / Gunst / Zank / Ort / Kuß / Thron /  
 Mord / Sarg / Geld / Hold / Danksagen  
 Was Gutt / stark / schwer / recht / lang / groß / weiß / eins / ja / Lufft /  
 Feur / hoch / weit / *genennt* /  
 Pfllegt Böß / schwach / leicht / krum / breit / klein / schwartz / drei /  
 Nein / Erd / Flutt / tiff / nah / *zumeiden* /  
 Auch Mutt / lib / klug / Witz / Geist / Seel / Freund / Lust / Zir / Ruhm  
 / Frid / Schertz / Lob *muß scheiden* /  
 Wo Furcht / Haß / Trug / Wein / Fleisch / Leib / Feind / Weh / Schmach  
 / Angst / Streit / Schmach / Angst / Streit / Schmertz / Hohn *schon  
 rennt*  
*Alles wechselt; alles libet; alles scheint was zu hassen:  
 Wer nur disem nach wird-denken / muß di Menschen Weißheit  
 fassen.* (Kuhlmann 1671/1971, 54f.)*

The *sestina*, a poem composed of six stanzas of six lines each with a half-stanza of three lines at the end, was invented by troubadour poets in Italy and Provence. It has only six rhyming words at the end of the lines, which change according to a strict rhythm from stanza to stanza: 123456/715243/364125/532614/451362/246531/123.

In German literature, the *sestina* was not cultivated before the 17th century. There are some *sestinas* in the works of the usual “suspects” from the Baroque era such as Schottelius, Zesen, Harsdörffer, Opitz, Kuhlmann or Georg Rudolf Weckherlin (1584-1653). Throughout the 18th century, it was rather disregarded. It was not until the Romanticist period that August Wilhelm Schlegel (1767-1845) drew the attention to the *sestina* in his critical writings. This impulse was then taken up by poets such as August Wilhelm Iffland (1759–1814), Wilhelm von Schütz (1776-1847), Ludwig Uhland (1787-1862) and Joseph von Eichendorff (1788-1857).

In contemporary literature, it was Oskar Pastior again who re-discovered the genre when he published a book of 34 *sestinas* under the title *Eine kleine Kunstmaschine* (1994). For the Oulipian Pastior,

the sestina guarantees the “text-generating power of additional constraints” (transl. from Pastior 1994b, 81). This is what brings him to programmatically entitling his book an “art machine” (“Kunstmaschine”):

The thought, as it appears in the course of rhymes, in the intricate rhythm with the transitory moment of 123456 to 615243. The sestina, to think like this in a “breaking embrace”, it permanently is aware of its genetic grammalogue, its ability (as I think of it after some experience with it) to create itself in constantly slanting loops of reassurance and prospective falsifications. (Transl. from Pastior 1994a: 81f.)<sup>30</sup>

Pastior even escalates and subverts the sestina paradigm by multiplying its constraints with those of other genres. In his “sestine mit diabetes” for instance, he combines the sestina with the anagram (Pastior 1994b, 40f.), and in “heureka mit euter am pneu”, he only uses two vowels per line (Pastior 1994b, 42f.).

Besides the methods and procedures mentioned so far, there are plenty of other methods of constrained writing such as the *chronograms* of the Baroque period:

A number is a poem if it contains and encloses a certain year: Such a number can be joined from German words in three ways: Either we accept the Latin M / D / C / X / V / J / according to their meaning as number. Or we use the German way where A / E / J / O / U / W / S may mean 10. 1. 5. 100. 1000. 500. 50. [...] Or resembling the Hebrews also in German every consonant indicates a number. (Transl. from Schottelius 1656/1976, 263)<sup>31</sup>

A simple phrase such as “Der hoChlöblJChen FrVChtrJngenDen GesellsChaft VrsprVng” contains the date 1617 (Harsdörffer 1647-53/1969, II, 27), and if chronogrammatic sentences are organized in verses, the sums of all the lines add up to the particular date, as can be seen from another of Harsdörffer’s examples:

BeLlebter IVgenD ZVChtr	662
Von stehen FLeIß gesVChtr /	161
trägt Wahrer TVgenD FrVChtr /	620
TrVtz Langer Zelten FIVChtr.	296

Die Auskunfft ist heurige Jahrzahl      1648.  
(Harsdörffer 1647-53/1969, II, 28)

An *acrostic* is a poem in which the first letter or word of each verse or paragraph spells out another message if they are read in vertical direction; the same goes for the *mesostic* and the *telestic* in which the letters are placed down a middle row or at the end of the lines. There had been acrostics as early as the Middle Ages, e.g. in the first half of the 15th century in Johannes Rothe's *Düringische Chronik*. In the Baroque era, the acrostic was well known as "Vornlauff" in the works of Schottelius, Harsdörffer, Zesen and others. In Eichendorff's work, there is the acrostic "In das Stammbuch der M.H." (ca. 1809):

Ist hell der Himmel, heiter alle *Wellen*,  
Betritt der Schiffer wieder seine *Wogen*,  
Vorüber Wald und Berge schnell *geflogen*,  
Er muß, wohin die vollen Segel *schwellen*.  
In Duft versinken bald all' liebe *Stellen*,  
Cypressen ragen nur noch aus den *Wogen*,  
Herüber kommt manch' süßer Laut *geflogen*,  
Es trinkt das Meer der Klagen sanfte *Quellen*?  
Nichts weilt. – Doch zaubern Treue und *Verlangen*,  
Da muß sich blüh'nder alte Zeit *erneuern*,  
Oeffnet die Ferne drauf die *Wunderlichtung*,  
Ruht Dein Bild drin, bekränzt in heil'ger *Dichtung*. –  
Fern laß' den Freund nach Ost und West nur *steuern*,  
Frei scheint er wohl – Du hältst ihn doch *gefangen*!  
(Eichendorff 1993, 132).

The *abecedarius* is a special case of an acrostic poem in which the words are used according to the alphabetic order of their initial letters. As early as in the 14th century, the Monk of Salzburg wrote his "Guldein Abc mit vil subtiliteten". Other examples include the famous scolding "Abgefaymbte" (1471) by Clara Hätzlerin (1430-76) or Quirinus Kuhlmann's "Das güldene Lebens-ABC des Freitags".

I already mentioned earlier that Dadaists as well as Surrealists referred back to aleatoric conceptions. But in general, Dadaists preferred "automatic" and improvising methods to combinatory ones.

Tristan Tzara's (1896-1963) famous recipe for composing a Dadaist poem does not define any specific collection of words but only describes a method for processing any data whatsoever (Tzara 1975, 382). Hans Arp's (1887-1966) creative approach is even less determined as can be seen from a pivotal statement on "automatic" writing in his essay "Wegweiser":

Many poems in *die wolkenpumpe* (cloudpump) are related to automatic poems. They were written down, like the Surrealistic automatic poems, immediately without thought or revision. Dialectal constructions, outmoded sounds, Vulgar Latin, confusing onomatopoeic words and verbal spasms are particularly noticeable in these poems. The "cloud pumps" are, however, not only automatic poems, but already anticipate my "papiers déchirés", my "torn pictures", in which "reality" and "chance" can be developed uninhibitedly. The essence of life and decay is incorporated into the picture by tearing up the paper or drawing. (Cited in Döhl 1996, 118; my revisions)<sup>32</sup>

Arp addresses one of the core problems of any concept of automatic writing here. In all his texts and artworks, the "laws of chance" can only unfold within the frame defined by both the author's "preconception" (Peter Bürger) and the specific peculiarities of the material. It is not surprising that he takes many words and phrases from daily newspapers, particularly from the advertisement sections:

Words, slogans, sentences, which were selected from daily newspapers and especially from advertisements in them, formed the basis of my poems in 1917. I often selected words and sentences from newspapers with my eyes closed by marking them with a pencil. I called these poems "arpades". [...] I interwove the words and sentences selected from the newspapers with freely improvised words and sentences of my own. Life is a mysterious breath of air, and the result of it can be nothing more than a mysterious breath of air. [...] We wanted to look through things and see the essence of life, and that is why we were moved at least as much by a sentence from a newspaper as by one written by a great poet. (Cited in Döhl 1996, 117)<sup>33</sup>

Unlike the Futurists, Cubists and Berlin Dadaists, Arp never pasted press clippings as pictorial representations into his pictures. For him,

newspapers rather provided a habitual vocabulary whose transitory character fit well into his poetics of permanent change as can be seen from the famous poem “Weltwunder”:

WELTWUNDER sendet sofort karte hier ist ein teil vom schwein alle  
12 teile zusammengesetzt flach aufgeklebt sollen die deutliche seitliche  
form eines ausschneidebogens ergeben staunend billig alles kauft  
nr 2 der räuber effektvoller sicherheitsapparat nützlich und lustig aus  
hartholz mit knallvorrichtung  
nr 2 die zwerge werden von ihren pflöcken gebunden sie öffnen die  
taubenschläge und donnerschläge [...]  
(Arp 1963, 47)

The work of the American-born Fluxus artist Emmett Williams (born 1925) can be discussed in the context of German literature because Williams lived in Germany until 1964 and then again since 1980. From 1957 to 1959, he was among the founders of the “Darmstädter Kreis für Konkrete Poesie” (Darmstadt Circle of Concrete Poetry). In 1956, Williams planned *The Ultimate Poem*, a recursive poetry generator:

1. Choose 26 words by chance operations – or however you please.
2. Substitute these 26 words for the 26 letters of the alphabet, to form an alphabet-of-words.
3. Choose a word or phrase (a word or phrase *not* included in the alphabet of words) to serve as the title of the poem.
4. For the letters in the title word or phrase substitute the corresponding words from the alphabet-of-words.  
This operation generates line one of the poem.
5. Repeat the process described in step 4 with the results of step
6. Repeat the process with the results of 5.
7. Et cetera. (Cited in Schulze 2000, 136)

### *Combinatory machines and text generators*

The rather simple principle of generating an abundance of signs from a limited repertoire is the basic idea of various mechanical devices,

which have been constructed in the course of the last centuries for the generation of texts. I already cited some very simple means of mechanizing the literary invention by using cardboard plates or other tools and media. The combination of these plates remains completely up to the user. However, there have been many more sophisticated mechanisms and machines for facilitating literary production by combining words or attributes selected from a number of lists. The prototype of such logic machines was the *Ars magna* devised by the Catalan monk Ramon Lull. Lull's machine consists of a stack of three concentric disks mounted on an axis where they are able to rotate independently. The disks were progressively larger from top to bottom. Nine fundamental terms, the so-called "principia absoluta" which comprise the main topics of scholastic philosophy, were related to the letters from A to K. By rotating the disks, a large number of random statements could be generated from the alignment of words. This mechanism generates "scriptons" which can be read as soon as the rotating disks with "textons" on them come to a complete standstill. At a random point in time, it results in an artifact that could not be predicted in advance. It is, of course, still up to the user – as Aarseth's triad of text/machine, collected words and user indicates – to interpret the resulting strings of signifiers.

The *Ars magna sciendi*, Athanasius Kircher's adaptation and elaboration of Lull's *Ars magna*, illustrates a common tendency of the Baroque era: In addition to books, alternative "Aufschreibesysteme" (Friedrich Kittler) appear that are storage media of traditional knowledge and generators of new knowledge at the same time. Neither the storing nor the production of knowledge, however, is ascribed to an author, and the knowledge is not written or printed in syntagmatic chains but machines are designed, which generate the knowledge from a compact source code by combinatorial procedures.

This refers back to my considerations of linguistic theories of the Baroque era. Harsdörffer implemented the methods of generating stem words and word formation rules in his *Fünffacher Denckring der Teutschen Sprache* (1651) (fig. 2), and Quirinus Kuhlmann, too, came up with the idea of a changing wheel (but, unfortunately, without giving any details, cf. Neubauer 1978, 33ff.). These word-generating machines are the missing link between the *langue* of the



German language and Lull's *ars combinatoria*.

Harsdörffer claims that his machine is able to mechanically reproduce all possibilities of German without having to compile voluminous dictionaries. The *Denckring* consists of five rotating disks, which the user must cut out from the book at first:

This leaflet has to be cut out, parted into five disks and fastened onto five equal leafs of paper so that each disk can be turned around separately and when this has happened one has to glue that five-fold leaf back in. (Transl. from Hundt 2000, 283)<sup>34</sup>



Figure 2. Georg Philipp Harsdörffer's *Fünffacher Denckring der Teutschen Sprache* (1651).

On the inner disk, there are 49 prefixes followed by 60 initial letters, 12 medial and 120 final letters as well as 24 suffixes. Aarseth

would call these elements “textons” from which millions of different “scriptons” can be generated.<sup>35</sup> It is a specific feature of Harsdörffer’s machine that by setting the storage itself in motion it simultaneously turns out to be a generator. The linear reading process is transformed into a rotating mechanism. The user has to start the mechanism, and he can either stop the rotating disks or just wait until they come to a complete standstill. From the point of view of production aesthetics, the outcome of such a machine-based combinatorics cannot substantiate any concept of artistic originality, and from the point of view of reader-response theories, we are confronted with a reader who can only interpret transitory strings of signifiers. Thus Harsdörffer did not only use his *Denckring* for representing all possibilities of word formation but he also considered it a useful tool of literary writing:

This word-generating procedure then is completely accurate in creating a complete German Dictionary and we retain our opinion that all these composite words should be allowed as good German, especially in poems, even though they might not be used otherwise. (Transl. from Harsdörffer 1651/1990, 518)<sup>36</sup>

This is Harsdörffer’s solution of the problem of the non-semantic “blind” words. He thus resolves the problem that his machine inevitably generates words, which make no sense in the German language by declaring the outcome of his *Denckring* to be the proper language. This is the poetic potential of the machine; it becomes a generator of poetic invention or a mobile rhyming dictionary “for inventing rhymes by looking for the rhyming syllables on the third or fourth disk and then turning the second disk to add the rhyming letters” (transl. from Harsdörffer 1651/1990, 518).<sup>37</sup>

Text generators based on rotating disks, however, are no peculiarity of the Baroque era but there also have been some interesting examples in recent times, e.g. in the Fluxus movement. André Thomkins (1930-85) produced his polyglot machine *dogmat-mot* (1965), which allows the user to produce “mobile dogmas” (fig. 3). This machine consists of ten hexagonal cards, each with 12 words that are common in each of the three languages German, English and French (there are 48 German-French, 60 German-English and 12 German-French-Eng-

lish words). The hexagons pivot on a plane and form phrases in three directions on the hexagonal roof (Thomkins 1965). They can even be arranged differently on the ten slots, so that the number of combinations can further increase. Thomkins gives an instructive German-English example on the blurb of his Fluxus Box:

WORT HAT BALD SENSE  
 ein engländer liest:  
 wurzel hut kahler sinn  
 (eierkopf, haargenau)  
 a german reads:  
 word has soon scythe  
 (words mutual short-cut) (Thomkins 1965)



Figure 3. André Thomkins: *dogma-mot* (1965).

Other writers and artists also worked with rotating disks or other moving media: Ferdinand Kriwet (born 1942) wrote many of his texts on disks, among them are three-disk-texts whose disks overlap and thus make combinations of elements possible. Dieter Roth (1930-98) produced so-called “Leserollen” (reading rolls) – paper webs with abstract ornamental patterns – for the “Apparat zum Simultanlesen” (Apparatus for simultaneous reading). This machine was invented by his fellow-artists Daniel Spoerri and Jean Tinguely and consists of a rotating rod driven by an engine. On this rotating rod, paper webs can be fixed from which readers can simultaneously read varying texts.

Besides his rotating disks, Harsdörffer designed further mechanisms of word formation: He suggested inscribing the letters of the German alphabet in the dice. If the user throws two dice, he can create syllables. This method can be extended by using additional dice. If we apply a thematological approach to the history of literature, we also find at least one very prominent example of a mechanical apparatus for the production of texts which consists of revolvable wooden dice: the famous machine of the Grand Academy of Lagado in Jonathan Swift’s *Gulliver’s Travels* (1726).

Although none of the following examples can keep up with the fame of Swift’s novel, there have been some writers who experimented with dice. Max Bense e.g. generated some of his so-called “Dünnschliffe” by rolling dice as can be seen from the following text which combines clippings from a newspaper and sections from a Franz Kafka novel:

MEIN Standpunkt und der Kirschbaum oder die Wegfahrt und der Überblick  
oder die Handhabe und das Fortbleiben oder Josef. K. und der Vormärz  
oder die Polizei und das dritte Fenster oder ein Horizont und das  
zerrissene Blatt oder der Duft und der Anflug das Verwelkte und das Schiff  
oder das Unerwartete und das Wort oder die Zärtlichkeit und das Gehen  
oder das Lesebuch und das Selbst oder die Nachwelt und Paris oder  
das ermüdete Sein und noch ein Händedruck oder irgendwo und Niemand.

(Bense 1961, 246)

The self-appointed “total artist” Timm Ulrichs (born 1940) merged the dice with the anagram in his text object *CASUAL : CAUSAL* (1982, fig. 4). He chiseled the letters of the source term into cubic stones and thus addresses the relation between chance and causality:

The constellation of dice in the sand-pit, may as the random result of 6 throws present the word “C-A-U-S-A-L” ordered “according to the laws of chance” (Hans Arp): randomness in causality, the causality principle of chance, necessary chance and random necessity.

(Transl. from Holeczek & v. Mengden 1992, 210)<sup>38</sup>

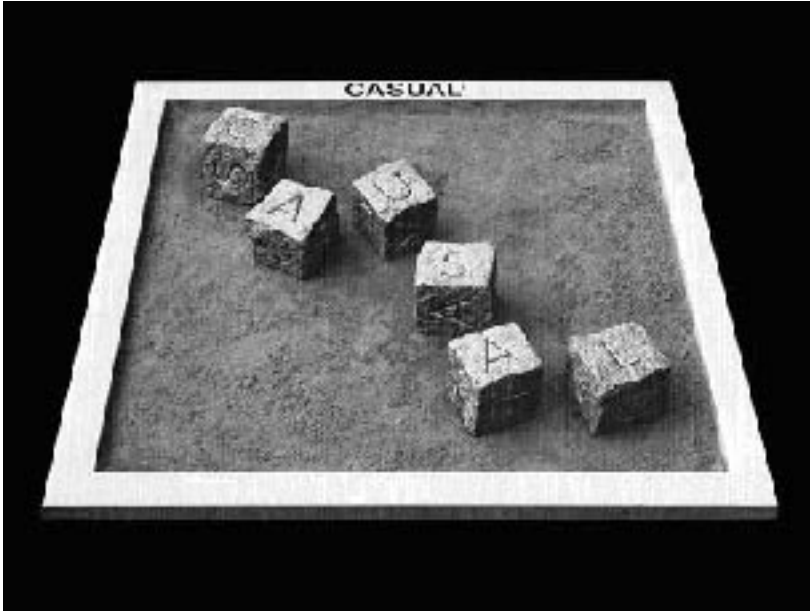


Figure 4. Timm Ulrichs: *CASUAL : CAUSAL* (1982).

It is only a small step from such permutative procedures based on mechanical devices such as rotating disks or dice to the use of computers for producing literature. In Germany, this was done in the late 1950s and early 1960s by the “Stuttgarter Gruppe”. The mathematician and software engineer Theo Lutz was one of its members. In 1959, he produced so-called “stochastic texts” using the ZUSE Z 22 mainframe of the Stuttgart University’s computer centre. Lutz had generated a vocabulary from Kafka’s *The Castle*, which he then permuted by using a program written in ALGOL. The computer scientist Rul Gunzenhäuser also published some computer-generated poems.

These first pioneering experiments may not have been satisfying for traditionalists but for the “Stuttgarter Gruppe” they appeared as the early stages, the “incunables of ‘artificial poetry’”, Döhl recalls (Döhl 1997). This concept of “artificial poetry”, however, which was explicitly based upon permutative and stochastic procedures was soon extended to other literary genres and accompanied by a variety of programmatic essays and manifestos such as Abraham Moles’ “Erstes Manifest der permutationellen Kunst” (“First Manifesto of permutational art”, 1962) or “Zur Lage” (“State of Affairs”, 1964) by Bense and Döhl:

Their language has gained material independence from the traditional and historically determined syntactic sequence subject-predicate-object in favor of new linguistic structures, in favor of new acoustic and/or visual arrangements. By creating unexpected arrangements on the syntactic and/or semantic level in a very literal sense there emerges poetry of words, of the letter-case, of colors, of sounds. [...] The creation of aesthetic structures no longer results from emotional constraints, from mummifying or mystifying intentions but on the basis of intentional theories, intellectual (Cartesian) honesty. [...] The artisan, who handles the materials, who revives the material processes and keeps them going, has again taken the place of the poet-seer, of the juggler of contents and emotions. Today, the artist produces situations on the basis of intentional theories and intentional experiments. We are speaking of experimental poetry, insofar as its particular products are aesthetic verifications or falsifications. We are speaking of a *poietike techné* again. We are speaking of a progressive aesthetics or poetics once again, whose intentional application demonstrates a progression of literature comparable to the progression of science. (Transl. from Gomringer 1972, 165f.)<sup>39</sup>

The interest in working with computers was not limited to the mathematicians of the group but also inspired writers and artists like Reinhard Döhl and Klaus Burkhardt (1928-2001) who jointly wrote the *poem structures through the looking glass* (1969). Bense and Döhl incorporated computer-generated passages into their so-called “Mischtexte” (mixed texts) like Döhl’s *fingerübungen* (1962), *Prosa zum Beispiel* (1965) or the radio play *Monolog der Terry Jo* (1968, engl. *Monologue: Terry Jo*) by Bense and Ludwig Harig (born 1927):

The monologue starts with a computer-text. There are nine synthetic approaches to the language of the girl. The fact that there are certain analogies between the initial subconscious state of mind of the girl and the subconscious of a computer might let us consider that the first use of a programmed, machine-generated text in a radio-play can be justified. These monologous computer-texts are realized by translating it into a synthetic language created by a complicated vocoder-system that is reduced more and more in the course of the monologue and thereby replaced by the natural voice. (Transl. from Schöning 1969, 58)<sup>40</sup>

The idea of generating entire texts on computers was soon taken up by some other computer centers during the 1960s: In 1966, Gerhard Stickel produced his *Monte-Carlo-Texte* on the IBM-7090 mainframe of the Deutsches Rechenzentrum in Darmstadt which he subsumed under the genre name “Auto-Poems” (Stickel 1967). One year later, Manfred Krause and Götz F. Schaudt published their book *Computer-Lyrik. Poesie aus dem Elektronenrechner*; the programs included both rhyme schemes and measures (Krause/Schaudt 1967).

### *From file boxes to hypertext: Digressions and permutative novels*

“If a novel”, Alfred Döblin (1878-1957) once argued, “cannot be cut up like a worm into ten pieces so that each bit moves independently, then it is no good” (cited in Murphy 1998, 21).<sup>41</sup> Although every biologist would repudiate this argument, Döblin’s *bon mot* refers to a fundamental precondition of all hyperfictions in both print and computer-based media. The producer of such a text has to compile a collection of text segments and to define relations between these fragments regardless of the specific medium he is writing for. In the history of literature, this ranged from fragments, paper slips or excerpts which were collected in file boxes and notebooks and then presented to the reader – either in books or in text objects like cases, boxes, sometimes even installations or environments such as Michael Badura’s *Zettel-Werke*. It is then up to the reader to *ergodically* recombine the segments in the course of reading.

This development, too, was initiated in the Baroque era when various alternative storage devices and discourse networks challenged the fixed chains of signs of printed books:

If the data games and letterphantasma become established as printing technologies beyond all metaphors, the static space of books transforms into an (inter-) medium itself: transforms into this (re)sortable index box in which the memos of potential indexers end up.

(Transl. from Rieger 1997, 100)<sup>42</sup>

But how did writers react to this challenge? For the purpose of this historical (re)construction, the rather pragmatic approach of Monika Schmitz-Emans may be helpful. She defines “book labyrinths” on a material level as “non-linear constructed books, which explicitly ‘send’ the reader to and fro by means of typography, reading instructions, non-linear pagination or other signals, or as collections of text segments” (transl. from Schmitz-Emans 2002, 179).<sup>43</sup> This brings to the foreground Aarseth’s cybertext theory as there are now present the three basic elements of a material medium, the non-trivial effort of the reader and the text segments which the reader has to recombine “modeling the literary process itself” (transl. from Schmitz-Emans 2002, 200).

Regarding the arrangement of text segments by the author, two types can be distinguished: Segments can either be put together in succession in a book and highlighted only as loosely associated elements by cuts, numbers, chapter headings or various other paratextual elements or, alternatively, they can be printed on loose leaves such as untacked sheets of paper, cards or lots. In each case, familiar reading conventions have to be relearned, and thus most of these books contain paratextual features such as reading instructions, game rules, etc. But unlike the rules of football or board games, these instructions are not intended as a body of rules imposing sanctions on those who break them. In fact, these instructions are ironically broken, and the writers of such texts usually discuss and question the rules themselves; in many cases, they even call on the readers to challenge or to expand them by themselves, so that literature explicitly transcends the space of the rule-governed game in favor of a “meta-game” (Schmitz-Emans 2002, 193).

Most historical descriptions of print hyperfictions have focused on examples from Romanic and American literatures. Examples of novels and stories which link the text segments by hyperlinks, indi-



ces, annotations, etc. include Jorge Luis Borges' (1899-1986) short stories, particularly *El jardín de senderos que se bifurcan* (1941, engl. *The Garden of Forking Paths*), as well as Georges Perec's (1936-82) novel *La vie mode d'emploi* (1978, engl. *Life A User's Manual*). According to Schmitz-Emans, Perec's novel on the one hand is a novel about a jigsaw puzzle, and on the other hand, the whole novel can be seen as an intricate jigsaw puzzle itself (Schmitz-Emans 2002, 180). Further dazzling literary experiments include Julio Cortázar's (1914-84) *Rayuela* (1963, engl. *Hopscotch*) which follows the model of the hopscotch game and its follow-up novel *62/modelo para armar* (1968, engl. *62: A Model Kit*), Vladimir Nabokov's *Pale Fire* (1962), Edoardo Sanguineti's *Il Guico dell'Oca* (1967), Milorad Pavić's *Hazarski rečnik* (1984, engl. *The Dictionary of the Khazars*) and *Predeo slikan čajem* (1988, engl. *Landscape Painted with Tea*) and Italo Calvino's *Il castello dei destini incrociati* (1973, engl. *The Castle of Crossed Destinies*), which was inspired by Tarot cards. Queneau's sonnet machine *Cent mille milliards de poèmes*, though, is considered a model of innovative literary forms on loose leaves just as Marc Saporta's card-game novel *Composition No. 1* (1962) or B.S. Johnson's "novel-in-a-box" *The Unfortunates* (1969). Both consist of unpaginated sheets on which fragments of a story are printed. The reader can shuffle the pages and read the resulting random order.

It is obvious that there seems to be a lack of prominent examples from German-language literature though it would be easy to contradict this impression by pointing to a scene in Johann Wolfgang Goethe's classic Bildungsroman *Wilhelm Meisters Lehrjahre* (1795/96, engl. *Wilhelm Meister's Apprenticeship*). Friedrich tells Wilhelm Meister of a literary game that he has been playing with Philina in their library. They invented the game to avoid getting bored with the limited number of books:

At last, Philina hit upon the royal plan of laying all the tomes, opened at once, upon a large table: we sat down opposite to each other: we read to one another; always in detached passages, first from this book, then from that. Here was a proper pleasure! We felt now as if we were in good society, where it is reckoned unbecoming to dwell on any subject, or search it to the bottom; we thought ourselves in witty gay society, where none will let his neighbor speak. We regularly treat ourselves

with this every day; and the erudition we obtain from it is quite surprising. Already there is nothing new for us under the sun; on everything we see or hear, our learning offers us a hint. This method of instruction we diversify in many ways. Frequently we read by an old spoiled sand-glass, which runs in a minute or two. The moment it is down the silent party turns it round like lightning, and commences reading from his book; and no sooner is it down again, than the other cuts him short, and starts the former topic. Thus we study in a truly academic manner: only our hours are shorter, and our studies are extremely varied. (Cited in Carlyle 1899, 137f.)<sup>44</sup>

But there is no need at all to limit this to an analysis of motifs, as there are plenty of German print hyperfictions. The printing press and the distribution systems of the Renaissance had established accurate “address-systems”, which for the first time allowed accessing any text passage. At the same time, Baroque writers and linguists established indices or “Blatweiser” for making this access to data easier. In his *Mathematische und philosophische Erquickstunden* (1651), Harsdörffer developed an elaborate file-card system for keeping the imminent disorder of data under control:

If you want to create an index system, you note the contents onto a piece of paper correctly, cut it into distinct pieces and place each one into its corresponding box for that letter. From there you finally take it, sort the letters into their correct order and then glue the pieces one after another or rewrite them correctly. (Transl. from Harsdörffer 1651/1990, 57)<sup>45</sup>

Hence Stefan Rieger described the Baroque knowledge management systems as predecessors of modern hypertext technologies:

In the Baroque period, hybrid text forms developed that were touching the borders of the printed book. Facing the economy and efficiency of Baroque data storage, the linear organization of books began to compete with alternative forms of notation. These organized access by indices and thus tried to replace the strict linear sequence of books by other ways of presenting knowledge, such as synopses. (Transl. from Rieger 1997, 88)<sup>46</sup>

Harsdörffer and his Baroque contemporaries implemented efficient data storage devices and data mining tools by compiling complex registers. This happened in order to get the overflowing knowledge of their times under control whereas poets emptied the file boxes in a rather playful way, as could be seen from Zesen's novel *Assenat* (1670). The plot of the novel – the life and love story of biblical Joseph – is narrated on 344 pages, which are supplemented by an appendix of another 200 pages with mythological and historic digressions, annotations, etc.

The works of Jean Paul (aka Johannes Paul Friedrich Richter, 1763-1825) have also been repeatedly characterized as hyperfictions *avant la lettre*. His excessive use of digressions, annotations, footnotes and periphrases that interrupt his narration again and again and lead him astray are an expression of the strong sense of individuality of early Romanticism (Ueding 2004). Hence the narrator of his novels establishes subjectively motivated relations between entirely unrelated elements:

One could ask whether it would not be helpful and pleasant to have a collection of essays in which ideas from all sciences without any definite direct (artistic or scientific) goal were mixed together not like poisons but like cards; like the mental dice of Lessing they would be profitable for anyone who knew how to *win* in *games*. I have this collection and add to it daily, if only to free the head as much as the heart. (Jean Paul 1973, 144)<sup>47</sup>

This method was only possible due to Jean Paul's excerpts, which he collected from borrowed books since he was an adolescent preparing for studying theology. Since 1782, these miscellaneous excerpts became the generative moment of his literary writing (Müller 1988, 9). However, these excerpts did not help compiling encyclopedias from the collected knowledge; they rather allowed infinite digressions. This was made possible by the wit which Jean Paul defines in his *Vorschule der Ästhetik* (1804, engl. *School of Aesthetics*) as an ability to discover "the similarities between *incommensurable* magnitudes, between physical and spiritual worlds (e.g., sun and truth), in other words, the equation of self and other, of two perceptions" (Jean Paul 1973, 122).<sup>48</sup> In Jean Paul's works, wit is a method of combining sub-

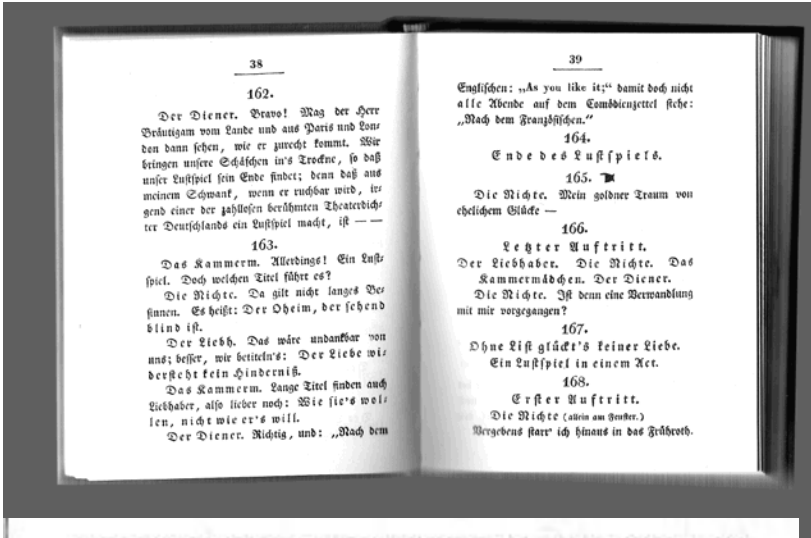
ject matters that are organized in different text units and then recombining them by cross-references and footnotes. These combinations are carried out according to the principles of chance.

From the “mental dice” (“geistige Würfel”) Jean Paul is describing with his mix of thoughts and excerpts, it is only a small step to proper dice. Hence it is no surprise that many writers take up rules and procedures of familiar dice and card games for organizing plots and narratives. The idea of generating texts by throwing dice and then selecting words from a number of lists according to the sum of the pips is not exclusively reserved to the experimental writers of the Baroque period or the avant-garde writers following Stéphane Mallarmé’s (1842-98) *Un coup de dés jamais n’abolira le hasard* (1897). As early as the 1820s, Georg Nikolaus Bärmann (1785-1850) – at that time known as a rather minor playwright and critic – used dice as a tool for generating texts. First, he published the book *Die Kunst ernsthafte und scherzhafte Glückwunschedichte durch den Würfel zu verfertigen* (*The Art Of Creating Serious And Funny Greeting Poetry By Throwing Dice*, 1825), and only four years later, he brought out *Neunhundert neun und neunzig und noch etliche Almanachs-Lustspiele durch den Würfel*. *Das ist: Almanach dramatischer Spiele für die Jahre 1829 bis 1961* (*Ninehundredandninetynine And Some More Almanac-Games Throwing Dice. I.e.: Almanac Of Dramatic Games For The Years 1829 To 1961*, Bärmann 1829/1972), a parody of the popular *Almanach dramatischer Spiele auf dem Lande* (*An Almanac Of Dramatic Games In The Country*). The book contains 1,200 numbered dramatic text fragments including dialogues, stage directions, titles, subheadings, etc. To enable its users to create a readable and playable drama from these fragments, the book is accompanied by a so-called throwing chart (“Wurf-Tabelle”, fig. 5). After each throw, the reader must search in the chart for the number of the particular fragment. For producing a complete drama, 200 throws are required.

Much later, around 1970, many writers were experimenting with non-linear texts. This tendency was accompanied by influential reader-oriented theories of literature such as Umberto Eco’s reflections on the “open work of art”, or Roland Barthes’ distinction between readerly and writerly texts, or the gap-concept of Wolfgang Iser’s reader-response theory. All of these were approaches conceptualizing the

reader as collaborator or “wreader” as George Landow would have called it some thirty years later (Landow 1994, 14).

In Germany, the subgenre of the permutative dictionary novel was quite successful at that time. The text of such a novel is subdivided into numerous entries, which are arranged in alphabetical order.



	1 <sup>r</sup> Wurf	2 <sup>r</sup> Wurf	3 <sup>r</sup> Wurf	4 <sup>r</sup> Wurf	5 <sup>r</sup> Wurf	6 <sup>r</sup> Wurf	7 <sup>r</sup> Wurf	8 <sup>r</sup> Wurf
1	167	519	904	663	25	1078	415	823
2	521	2	168	29	958	30	664	306
3	826	959	15	522	3	169	1050	414
4	1081	10	416	667	305	827	523	10
5	5	172	521	6	961	1082	309	669
6	829	669	962	828	1083	1155	35	961

Figure 5. “Wurf-Tabelle” from Georg Nikolaus Bärmann’s Neunhundert neun und neunzig und noch etliche Almanachs-Lustspiele durch den Würfel (1829).

Schmitz-Emans argues that the dictionary novel is characterized by discussing order and by reflecting the contingency of order since the order of the alphabet represents a contingent principle of structuring knowledge that competes with its immanent order – if there is anything like that (Schmitz-Emans 2002, 182). The best-known novel of this genre certainly is Andreas Okopenko's *Lexikonroman einer sentimental Reise zum Exporteurstreffen in Druden* (*Dictionary-novel Of A Sentimental Journey To The Exporters' Meeting At Druden*, 1970). In the introductory directions ("Gebrauchsanweisung"), Okopenko calls on his readers to concoct their individual arrangement of text fragments:

The sentimental journey to the exporters' meeting at Druden has to be executed first. The material is waiting, just as the Danube and the multitude of plants, stones and people at its banks are waiting for many side-trips of their own choice. The material is ordered alphabetically so that you can find it without difficulty. Just like in a dictionary. (Transl. from Okopenko 1970, 5)<sup>49</sup>

The entries are arranged alphabetically. In addition, some fragments are linked by arrowheads → and some italicized fragments are privileged:

*Those* references, which may help you to continue the journey from place to place and which thus should have priority are *printed in italics*. (Transl. from Okopenko 1970, 5)<sup>50</sup>

In his next novel *Meteoriten* (*Meteorites*, 1976), Okopenko deliberately intensifies the principle of openness by explicitly doing without any game rules and instructions:

Potential readers of my "dictionary novel", who might have been neutroticized by using my previous books, can be reassured that "Meteoriten" can be read without following any instructions. This freedom is now inconspicuous and complete. It is most suitable if the reader just browses through the book, but, of course, he can also read it from the beginning to the end or according to any individual mathematical habits. (Transl. from Okopenko 1976, 12)<sup>51</sup>

Ror Wolf (born 1932) had noted in the early 1970s that he would be highly fascinated by a book, “which you get from the shelves, open at random, in which you can start reading on any page, and into which you always find an entry, no matter where you open it, so that it is unimportant what previously happened and what is going to happen afterwards” (transl. from Baier 1972, 154f.).[52] More than ten years later, he started publishing a series of literary dictionaries whose fictitious editor is Wolf’s *alter ego* Raoul Tranchirer – a pen name which explicitly refers to the German verb “tranchieren” (= to carve, to chop up sth.): The first publication was *Raoul Tranchirers vielseitiger großer Ratschläger für alle Fälle der Welt* (1983), followed by *Raoul Tranchirers Mitteilungen an Ratlose* (1988) and finally by *Raoul Tranchirers Welt- und Wirklichkeitslehre aus dem Reich des Fleisches, der Erde, der Luft, des Wassers und der Gefühle* (1990).

Ferdinand Kriwet’s *Rotor* (1961) is not a dictionary novel but a sort of text kit consisting of 98 elements that can be used in any combination. In his *durch die runse auf den redder* (1965), however, the reading is being sidetracked from the main text into four auxiliary texts. Peter O. Chotjewitz applied a similar method in his novel *Vom Leben und Lernen* (1969) whose subtitle reads “stereo texts”. The story starts off with a seemingly conventional plot on the first pages. But soon the reader realizes that numerous footnotes are incorporated into the novel’s beginning. The extent of these footnotes far exceeds that of the main text.

Oswald Wiener’s (born 1935) *die verbesserung von mitteleuropa, roman* (1969), too, breaks with conventional reader-expectations. Although this book is explicitly characterized as a novel, the text starts off with a person and subject index from which the reader can browse through the text. At the end of the book, there are various appendices. The main text does not consist of a fictitious story but rather of an extensive montage of both fictional and theoretical passages. Arno Schmidt’s (1914-1979) monumental book *Zettels Traum* (1970) – a book of 1,334 pages composed of three columns – tells the story of a writers’ couple visiting a colleague who is working on a translation of Edgar Allan Poe. Handwritten notes, blackenings, a strange orthography, etc. are incorporated into the typescript. The reader can

permanently jump from the conversation of the writers in the middle column to the Poe interpretation in the left or to loads of annotations and citations in the right column. Two years earlier than Schmidt, Franz Mon (born 1926) published *Herzzero* (1968), a text consisting of two versions arranged in two columns. Similar cross-readings have a long tradition in German literature which can be traced back to Georg Christoph Lichtenberg (1742-99) and turned into one of the starting points of the collage of quotes (Riha 1971).

Konrad Balder Schüffelen's (born 1929) "lottery novel" *deus ex catola: entwicklungsroman* (1964) does not bear any resemblance to a book:

schüffelen's lottery novels are texts, which are printed on paper-strips sentence by sentence. [...] the sentences are printed on hand-rolled, wood free, toned accounting paper. Both editions published by now contain more than 60,000 rolls. These have been put into beech wood cases of 5,5x15x11 cm according to the principle of chance. On the top covers of the cases there are serigraphic prints. The cases are waxed. For the sanitary handling of the language material, anatomic tweezers are included. (Transl. from Schulze 2000, 141)<sup>53</sup>

The ironic subtitle can be taken literally: The "novel" is only being generated if the user/reader uses tweezers to draw the paper slips on which the text fragments are printed from the wooden case – and then unwraps them (in German "entwickeln" means "to develop" or "to produce" but it also connotes "to unwrap"). For other lottery novels, Schüffelen cut classics such as Thomas Mann's *Gladius Dei* or well-known poems by Goethe and others into pieces in order to allow the recombining of the fragments by the user. He also experimented with other alternative ways to arrange text in various storage media. *Haus der Bienenkönigin* (1988) is a case constructed like a bee house; from this bee house, the user can draw paper slips on which supposedly all the words from Jean-Paul Sartre's *Les Mots* (engl. *Words*) are written

Other text objects include Schuldt's revolvable glass cylinders (fig. 6), Konrad Bayer's (1932-64) *flucht*, a text written on a paper cylinder, or Timm Ulrichs' three-dimensional text cube, a box containing 125 permutable dice with letters, syllables or text segments



written on all four sides. Michael Badura made environments from textual fragments, e.g. in his *Ebertsche Hypothese* (1974), a wall installation of loose leaves fixed to the wall, which the reader can only experience if he walks around in the exhibition room.



Figure 6. Schuldt's Textkörper (1965).

Herta Müller's (born 1953) *Der Wächter nimmt seinen Kamm* (1993) is a literary card game in the tradition of Marc Saporta (fig. 7). It consists of a box with 94 facsimiled text-image collages in postcard format. Müller cut the words from books and newspapers and pasted them onto the cards. In addition, there are photo collages or silhouettes on each card. The user/reader can arrange and read the cards in random order. Although poetic images are densely concentrated here onto single, unbound pages, they form an evolving network of motifs that give unity to the whole.

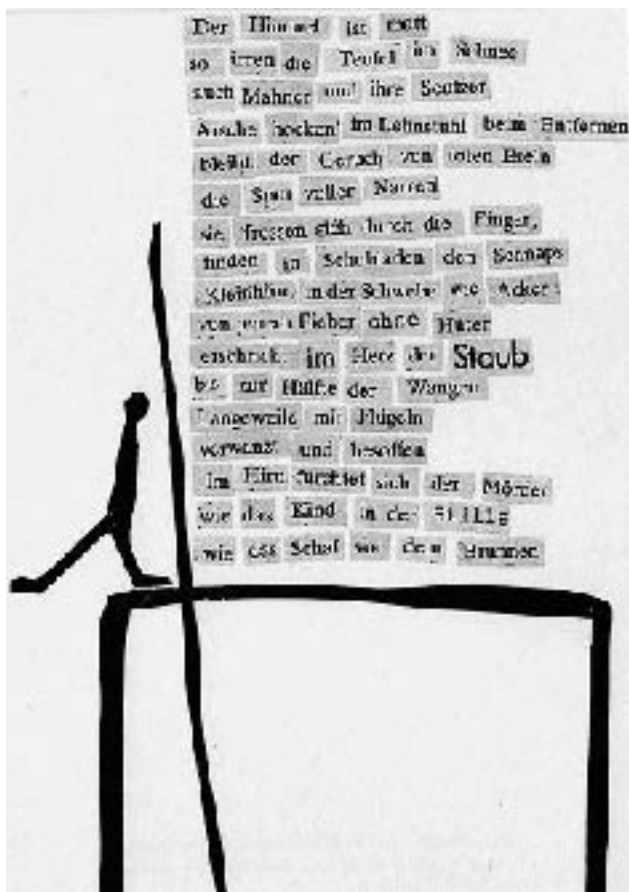


Figure 7. Card from Herta Müller's *Der Wächter nimmt seinen Kamm* (1993).

A similar box had been produced 30 years earlier by the Fluxus artist Tomas Schmit (born 1943). Instead of postcards, Schmit's *Verlegerbesteck* (1966) contains small adhesive labels, which the user can paste on whatever surface wherever he likes (fig. 8). The leaflet gives the following reading and acting instruction:

you – owner of this case – should have it more in your pocket than somewhere else, since here you're not so much asked to be reader, but: to be publisher (performer) and to give (real) context and (anonymous)

(second-grade-) readers (resp: second-grade-performers: who fill them out: for the third-grade-readers) (Schmit 1966)



Figure 8. Tomas Schmit's Verlegerbesteck (1966).

Peter Handke's (born 1942) *Deutsche Gedichte* (1969) is made of 20 sealed envelopes bound like a book. Inside the envelopes, there are texts – all of them linguistic “ready-mades” similar to those in Handke's famous *Die Innenwelt der Außenwelt der Innenwelt* (*The Inside-World Of The Outside-World Of The Inside-World*) published in the same year. The reader can only get hold of these texts by opening the envelopes and thus inevitably destroying the book-object.

It is striking that readers of printed hyperfictions are very often called on to co-operate in continuing the writing process. In Okopenko's dictionary novels, the reader is invited to improve the alleged shortcomings of the book:

Take the principle for the realization, think of the first computer, expand the novel by amending provocative words, or even better: write your own novel which will nail down the insignificance of my own. (Transl. from Okopenko 1970, 7)<sup>54</sup>

Additionally, there are gaps in the “dictionary” every now and then, in which the reader is invited to record his or her connotations and comments (Okopenko 1970: 11), paste images (ibid., 23) or self-written poems (ibid., 33). Kurt Marti (born 1921), too, designed his dictionary novel *Abratzky oder Die kleine Blockhütte. Lexikon in einem Band* (1971) “from the very outset as a beginning, a fragment, an everlasting “work in progress” inviting its readers to co-operate continuously” (transl. from Marti 1971, blurb).<sup>55</sup> Ror Wolf even stimulates “all clear-thinking readers” to set up “reality clubs” (“Wirklichkeitsvereine”) so that “Tranchirer’s thoughts will extinguish misfortune and failure” (transl. from Wolf 1990, 190).

### *Collaborations, telecommunication and literature*

This leads me to collaborative writing projects that can be distinguished into two types: firstly, collaborative texts, which are produced on site, e.g. in literary salons, writers’ groups or creative writing classes; secondly, collaborative long-distance writing projects, which actively involve telecommunication networks. The parlor games of the Baroque era already aimed at increasing creativity with the help of group dynamics, and oracle games were anticipating the surrealist “exquisite corpses” (which I unfortunately have to ignore in this essay on German literature). In these games, sentence fragments were whispered into the ear of the neighbor. Thus simple syntagmas and eventually entire sentences were generated step by step. Of course, this is not a literary genre in a strict sense as are, e.g., the so-called *Reyenreime* in which rhyme and meter need to be held. Harsdörffer cites a simple example in his *Frauenzimmer-Gesprächspiele*:

7. J[ulia]. Was ist in dieser Welt / das lange Zeit bestehe?
8. V[espasian]. Was ist in dieser Welt / das nicht so bald vergehe?
9. C[assandra]. Wie steht die eitle Welt / sie wallet kugelrund?
10. D[egenwert]. Wie steht der Erdenlast / der schwebet ohne Grund?

11. A[nge]lica]. Der Grund ist leichte Luft / doch kan der  
Last nicht fallen.
12. R[eymund]. Es ist die gantze Welt / des Glükks und  
Unglükks Pallen. (Harsdörffer 1641-49/1968, VII, 396f.)

This method is getting more complicated if each collaborator has to contribute one and a half or even two lines as can be seen from the poem “Frülings-Freude” by Harsdörffer, Birken and Johann Klaj (1616-56):

F.  
Es fúnken und flinken und blinken  
S. bunt-blümichte Auen.  
Es schimmert und wimmert und glimmert  
K. frü-perlenes Thauen.  
Es zittern / und flittern / und splittern  
F. laubträchtige Aeste.  
Es säuseln / und bräuseln / und kräuseln  
S. windfriedige Bläste.  
Es singen / und klingen / und ringen  
K. Feld-stimmende Flöten.  
Schalmeyen am Reyen erfreuen [...]

(Cited in Rühm 1964, 10f.)

Up until the present, there have been many collaborative novels, novellas, and stories in German literature that were usually written in sequence. Thus writers were either co-operating at the same place anyway, or they only used the post for sending the completed segments from one to the other. Various kinds of artistic co-operation ranging from mere sociability to programmatic discussions in literary salons and in societies and even to collective writing in poets’ circles established during the 18th and 19th century (Seibert 1993, 277-280; Parr 2000).

Ludwig Uhland and Justinus Kerner jointly wrote the satire *Abendphantasie an Mayer* (1802) as did Arno Holz and Johannes Schlaf in writing the novella *Papa Hamlet* (1889). In 1808, the novel *Die Versuche und Hindernisse Karls. Eine deutsche Geschichte aus neuerer Zeit* was published anonymously; it later turned out that Karl August Varnhagen von Ense, Wilhelm Neumann, August Ferdinand

Bernhardi and Friedrich de la Motte Fouqué had jointly written it. Fouqué was also participating, with E.T.A. Hoffmann, Adelbert von Chamisso and Karl Wilhelm Salice Contessa, in the unfinished *Roman des Freiherrn von Vieren*. The *Roman der Zwölf* (1908) was initiated by the publisher Konrad W. Mecklenburg who invited twelve writers into a co-operative venture, among them Hanns Heinz Ewers, Hermann Bahr, Otto Julius Bierbaum, Herbert Eulenburg and Gustav Meyrink. The method was very simple:

Mr. A. wrote the first chapter; this was immediately sent to Mr. B. When he had finished chapter 2, Mr. C. got the first two chapters for writing a third one, and so forth. Each of the 12 writers develops the story according to his manner and to his style. (Transl. from Estermann 1992, 12)<sup>56</sup>

A variety of recent serial novels are also based on a similar concept: *Das Gästehaus* (1965) was inspired by Walter Höllerer when he was director of the *Literarisches Colloquium Berlin*. Among the contributors were Peter Bichsel, Nicolas Born, Hans Christoph Buch, Hubert Fichte and Hermann Peter Piwitt. The weekly journal "Die Zeit" initiated a cliffhanger novel in 1999 to which for one year the cream of German contemporary literature contributed. It set off with Marcel Beyer's opening chapter "Anruf um Mitternacht" which was followed by texts by Birgit Vanderbeke, Andreas Neumeister, Judith Kuckart and many others until Terézia Mora wrote the final chapter "Höllisches Finale" one year later.

In genre literature, too, serial novels have been written from time to time. Such famous writers like Heinrich Böll, Christine Brückner, Reinhard Federmann, Hermann Kasack and Hans Weigel contributed to the satiric crime novel *Der Rat der Weltunweisen* (1965), and only recently ten German crime writers, among them well-known writers such as Gisbert Haefs and Ingrid Noll, jointly published the crime novels *Eine böse Überraschung* (1998) and *Gipfeltreffen* (2000).

In the international Dada movement, collaborative writing had a very different quality. In Zurich, Hans Arp, Walter Serner (1889-1942) and Tristan Tzara produced some collaborative poems under the name *société anonyme pour l'exploitation du vocabulaire dadaïste*, and Tzara, Richard Huelsenbeck (1892-1974) and Marcel Janco (1895-1963) had even radicalized the concept of artistic co-operation

with their simultaneous poems. Dadaist simultaneous poems were originally written for the performance on the stage of the “Cabaret Voltaire” where several speakers were to recite their parts simultaneously. Hugo Ball (1886-1927) defined the simultaneous poem as “contrapuntal recitative” dealing with the “value of the voice”:

The poem tries to elucidate the fact that man is swallowed up in the mechanistic process. In its typically compressed form it shows the conflict of the *vox humana* (human voice) with a world that threatens, ensnares, and destroys it, a world whose rhythm and noise are ineluctable. (Ball 1974, 57)<sup>57</sup>

During the 1950s and 1960s, the Dada impulse was taken up in a different manner by both the “Wiener Gruppe” (Vienna Group) and the “Stuttgarter Gruppe”. It is thus not surprising that the members of both groups collaboratively wrote and published several texts. Konrad Bayer, H.C. Artmann, Gerhard Rühm, Friedrich Achleitner and Oswald Wiener considered the Vienna Group not only as a forum for joint performances of their “literary cabaret” but also as a writers’ collective. Thus they collaborated in varying constellations:

everybody contributed suitable material: we soon became a real team, tossed sentences to each other like balls. Although we each individually made use of the potential we had tapped, montage proved to be a technique particularly conducive to the production of joint works. (Rühm 1997, 24; my revisions)<sup>58</sup>

In Stuttgart, Bense and Döhl jointly wrote the manifesto “Zur Lage” (1964) and the prose text *Hans und Grete. Eine deutsche Sprachlehre* (1970) is the result of a collaboration of Harig and Döhl. Radio plays such as Bense and Harig’s *Der Monolog der Terry Jo* (1968) or *Türen und Tore* (1971) by Jürgen Becker, Harig and Döhl were also written in cooperation.

Writers who were physically separated have been using their contemporary transmission media for networked collaborative projects for a long time, ranging from letters carried from one writer to the other by post (i.e. the transport network to the more recent technical communication media such as telephone, telegram, telefax, the

French “Minitel” system up to the latest computer-based technologies and services like the World Wide Web, e-mail, mobile phones or SMS.

*Writers’ letters* always have been an ambivalent genre: Usually, the published correspondence of writers is nothing but a documentation of their private letters to friends and fellow writers, which at some point was published posthumously. This, however, was done only in those exceptional cases where the letters themselves were regarded as important works of art. In most other cases, the writers’ correspondence is only published after his/her novels, poems or plays or he/she as a person have become famous and successful, so that publishers, scholars or ordinary readers hope to get further insight into his or her life and work. This has been the case not only with the most famous correspondence of German literature such as Goethe’s letters to Friedrich Schiller or Carl Friedrich Zelter, but also Franz Kafka’s letters to Milena Jesenská and Felice Bauer, Gottfried Benn’s correspondence with Richard Oelze or Heinrich Böll’s letters from the war – to mention just a few randomly selected examples.

Edited letters are characterized by a “double address”: On the one hand, they were originally addressed to a specific addressee; on the other hand, however, the general public gets access to letters without knowing much about the reason and motivation of the writer and thus can only rely on the annotations of the editor.

However, there are exceptions to this rule: in some cases letters must be regarded as *constituents* of an artwork. The essay “Ueber ‘Wilhelm Meisters Wanderjahre’” (1821) by Rahel Varnhagen (1771-1833) and her friends is an example of a text which in fact was written in correspondence but was projected for publication from the outset, as Barbara Hahn argues:

All these printed letters are no ex-post effect of a preceding life, because only as printed products they generate a reality that does not exist outside of the letters. (Transl. from Hahn 1990: 25)<sup>59</sup>

Rahel Varnhagen is an interesting example since only her letters were edited and not the answers of her correspondents. The dynamic process of creating a “work” of art thus cannot be reconstructed. These



letters only attain the coherence of an “artwork” by the editorial framing, which in Rahel’s case was done by her husband Karl August:

Already prior to the first transport the letters are affected by this rupture. They have both a place of writing and one of receiving; their fate is this circular movement of sending. To enter them into the extended circulation of the printing system, a collecting point for letters is required – a post office, so to speak – that organizes the forwarding of the letters to the public. (Transl. from Hahn 1990, 16)<sup>60</sup>

This is comparable for artists’ contributions to Mail Art or Correspondence Art projects, which were promoted in Germany by Klaus Groh, the editor of the *I.A.C. (International Artist Cooperation) Newsletter* or by Géza Pernecky. A higher degree of publicity than most Mail Art projects was achieved by the *Postversandroman (Mail Order Novel, 1970)*, a collaborative book project of the writer Peter Faecke (born 1940) and the Fluxus and Happening artist Wolf Vostell (1932-98), which was published in the renowned Luchterhand Verlag. The purchaser of this “novel” first received a hardcover jacket and an envelope containing two bolts for binding the consecutive deliveries. The users’ instruction was titled “Spiel ohne Grenzen” (Games without frontiers) thereby explicitly addressing the limitations of the printed book. In accordance with the tone of the time, Faecke and Vostell called for replacing the institutions of the literary market in favor of an autonomous distribution of texts by the producers themselves. They also tried to overcome the limits of print by supplementing their “novel” with objects such as a vinyl single with Peter Faecke’s *11 Romanen in 6 Minuten und 5 Sekunden* (11 novels in 6 minutes and 5 seconds, fig. 9). Vostell’s instructions for a happening, which callers could retrieve from his answering machine, are documented; elsewhere the readers were invited to paste newspaper clippings or account statements and to actively participate in this “work in progress” by sending their own contributions (fig. 10):

Use the mail order novel [*Postversandroman*], write to us, call us, bombard us – damn it, we’ll answer you in one of the next deliveries. Faecke/Vostell: the two agony uncles; our wives will assist us *and* will fully take part, we’ll distribute the deliveries in the streets as far as our

money will take us, and we'll shoot a film about these activities in one of the homeless neighborhoods in Cologne; you'll be able to watch this movie on Cologne house walls, send us information, call us at

735335 Faecke

or

517783 Vostell

we'll answer immediately *with brand-new ideas, we have plenty of them*, if you'd like to send money, OK., but send us information, manuscripts, etc. *no matter what*, we want to have books which don't cost more than 1 German mark, we want to have books which (being selected by an appropriate committee), will be distributed free of charge (annual expenses for all important books in the FRG: 500 million German marks). [...]

More specifically: Remember: We will remunerate your answer of your payment in form of an answer in our next delivery. What can you expect to happen, what can we expect to happen? Please do us the favor: join in, *kick your neighbor's ass, kick your own ass, search your old drawers, answer the phone, get into your car and come to see us, listen to the old songs with us, and if we don't like you, we'll kick you out!*, start writing yourself, write this book together with us [...].

(Transl. from Faecke & Vostell 1970; italics represent handwritten annotations in the original)<sup>61</sup>



Figure 9.  
Peter Faecke's 11 Romane  
in 6 Minuten und 5 Sekunden,  
the 3rd delivery to the  
Postversandroman (1970).

21.11.70

Lieber Briefkasten von Hel Vostell,  
+ Faede,  
neulich (1. Pfingsttag) haben wir  
telefoniert weil ich nach Köln  
kommen wollte. Ich halte es  
zunächst jedoch für besser, Euch  
etwas zu schicken, als selbst  
zu kommen, was ich ja  
immer noch kann.  
Ich schicke Euch also auch eine  
kleine Meditation, persönlich  
verfasst. Außerdem gehört es mir  
vielleicht, ein Projekt mit  
meiner Klasse (9. Realschulklassen)

Figure 10. Reader's contribution to Peter Faede's & Wolf Vostell's *Postversandroman*.

The avant-garde utopia of transgressing the boundary between art and everyday life can only be realized, Vostell argues in an interview with Lothar Romain, if the latest media technologies are being used. Hence he considers his use of answering machines only as a first step towards universal and bidirectional means of communication. Such

means would allow and require to “mix up all media in existence today” (“alle Medien, so wie es sie heute gibt, untereinander gemischt werden können und müssen”):

Every act of communication will connect each and everybody all over the world, such as each incident in the world has to do with every other incident in the world. [...] And from a formal point of view, I believe that the future of television, e.g., will be that every viewer will have his say on TV, so that we can end a situation in which millions of people are just consuming what is being provided by only a few editors. This means that in the future listeners and spectators will create their own program. (Transl. from Faecke & Vostell 1970)<sup>62</sup>

What Vostell expects from bidirectional television, complies with the utopian visions, which Bertolt Brecht (1898-1956) drew up with the radio in mind some decades earlier. In his famous radio theory, Brecht demanded the transformation of radio, the grandfather of all wireless media, from a means of broadcasting into a multi-channel means of communication. He argued that the technological potentials of the medium were not used adequately as long as the back channel was closed:

The radio would be the finest possible communication apparatus in public life, a vast network of pipes. That is to say, it would be if it knew how to receive as well as to transmit, how to let the listener speak as well as hear, how to bring him into a relationship instead of isolating him. On this principle the radio should step out of the supply business and organize its listeners as suppliers. (Cited in Strauss 1993, 15)<sup>63</sup>

This utopia of a bidirectional technological medium turning the passive reader, listener or spectator into an actor is a persistent claim of 20th century media theory. Hans Magnus Enzensberger in his “Baukasten zu einer Theorie der Medien” explicitly tied in with Brecht’s theory in the late 1960s demanding networked communication “based upon the principle of reciprocity” (transl. from Enzensberger 1970, 170).

Since that time, the latest transmission media such as radio and telephone, television and telefax have always been used for collaborative writing projects of which only a few should be mentioned

here: In the context of the new radio play (“Neues Hörspiel”) movement many writers and radio experts tried to put Brecht’s call for a mobilization of the listeners into action. A good example is Richard Hey’s *Rosie. Radio-Spektakel zum Mitmachen für Stimmen, Musik und telefonierende Hörer* (1969), a radio play in which the listeners had the opportunity to prompt the moderator to select one specific plot variant. On Michael Erlhoff’s initiative, the *Cassetten Radio* was carried out from January to December 1984. Following the chain letter principle, audiotapes were sent to various collaborators who recorded literary texts, noises or songs. Hence a technical storage medium was combined with traditional mail. Robert Adrian X (born 1935), a Vienna-based Canadian artist, was among the very first artists who used computer-based telecommunication technologies in the 1980s. He was one of the initiators of “ARTEX” (Artists’ Electronic Exchange Program), the first international communication system reserved to art, and he also founded, together with Helmut Mark, Zelko Wiener, Karl Kubaczek and Gerhard Taschler, the art group “BLIX” which initiated co-operative art projects such as *Wiencover IV* (1983), *Kunstfunk* (1984) or *Kunst BTX* (1985). For *Ars Electronica 1982*, Adrian organized the telecommunication project *Die Welt in 24 Stunden* (*The World in 24 Hours*) in which 16 artists from three continents tried for one day “to follow the midday sun around the planet – creating a kind of telematic world map” (Adrian 1989, 145). But dealing with Adrian’s work, however, we are already talking about current writers’ and artists’ telecommunication projects in computer-based and networked media, but this is too big a subject for *this* essay...

*I am grateful to Peter Gendolla for his critical advice and to Brigitte Pichon and Dorian Rudnytsky for checking the English version of this text and for translating quotes from Baroque German into contemporary English.*

1. “Der enge Rahmen von Sender und Empfänger ist damit überschritten; beide sind nur Teil einer unendlichen Kette von Wiederholungsakten, die sie nicht überschauen oder kontrollieren können; Zeichen werden von Kontext zu Kontext verschickt oder übertragen, Zeichen sind insofern immer Telekommunikation. Dass sie auf Kontexte verweisen, die im Moment ihrer Aktualisierung nicht zur Verfügung stehen, macht ihren eigentümlich fremden Charakter aus.” (Winkler 2004, 98f.)
2. “Dies bedeutet, dass die technische Leistung der Medien, räumlich-zeitliche Abgründe zu überbrücken, in den Kern des Semiotischen vorrückt. Zeichen also werden keineswegs zuerst konstituiert und dann (sekundär) verschickt. Das Zeichen selbst ist die Klammer, die die unterschiedlichen Kontexte zusammenzieht, und die technischen Medien exekutieren nur, was als Kontextwechsel im Zeichen immer schon angelegt ist.” (Winkler 2004, 168)
3. “In der Informatik eben ist Rekursion definiert als die Wiederanwendung einer Verarbeitungsvorschrift auf eine Variable, die bereits Ergebnis derselben Verarbeitungsvorschrift ist. Der Variablenwert ändert sich mit jedem Durchlauf der Schleife, und Effekt der Wiederholung ist gerade nicht die Herstellung von Identität sondern einer vordefinierten Variation. Rekursion ist insofern nicht einfache, sondern erweiterte Reproduktion; und Rekursion verschränkt Wiederholung und Variation mit dem Ziel, ein Neues hervorzubringen, ein Ergebnis, das in dieser Form nicht vorvollzogen werden kann.” (Winkler 2004, 173)
4. “Le classique qui écrit sa tragédie en observant un certain nombre de règles qu’il connaît est plus libre que le poète qui écrit ce qui lui est passé par la tête et qui est l’esclave d’autres règles qu’il ignore.” (Queneau 1973, 94)
5. “Les mathématiques – plus particulièrement les structures abstraites des mathématiques contemporaines – nous proposent mille directions d’explorations, tant à partir de l’Algèbre (recours à de nouvelles lois de composition) que de la Topologie (considérations de voisinage, d’ouverture ou de fermeture de textes). Nous songeons aussi à des poèmes anaglyphiques, à des textes transformables par projection, etc. D’autres raids peuvent être imaginés, notamment dans le domaine des vocabulaires particuliers (corbeaux, renards, marsouins; langage Algol des ordinateurs électroniques, etc.)” (Cited in Roubaud 1981, 359f.)

6. “Reine Kohärenz – etwa in Form von immateriellen, reinen Ideen – ist ähnlich undenkbar wie reine Kohäsion – als ein vollkommen kontextfreies Operieren mit Stoffen. Jedes konkrete Artefakt besteht aus Kohärenzmustern, die durch Kohäsion vermittelt – und aus Kohäsionsmustern, die durch Kohärenz erst erkennbar werden. [...] Kohärenz und Kohäsion sind unauflöslich miteinander verbunden, sodass sich lediglich eine gewisse Dominanz von Kohärenz- oder Kohäsionsmustern feststellen lässt.” (Schulze 2000, 23f.)
7. Schulze differentiates between four levels of consistency of cohesive and coherent structures: 1) *globally and locally inconsistent cohesion and coherence*: This would result in a completely non-intentional work which, however, appears rather improbable; 2) *locally consistent cohesion, but globally inconsistent coherence*: Such works are aleatoric and thus sufficiently non-intentional; 3) *globally consistent cohesion, but only locally consistent coherence*: In such works, aleatoric procedures are intentionally used; 4) *global consistency of cohesion and coherence* produces intentional works (Schulze 2000, 25).
8. “Ob nun wol etliche zu wolermdter Kunst geboren / so ist doch die Kunst nicht mit ihnen geboren; sondern muß erlernt werden / wie alles / was wir Menschen wissen wollen.” (Harsdörffer 1647-53/1969, II, 2).
9. In the following, I mainly draw upon the studies of Gardt 1994, Rieger 1997 and Hundt 2000.
10. “welche als stets saftvolle Wurtzelen den gantzen Sprachbaum durchfeuchten / dessen Spröslein / Ast- und Aderreiche Zweige in schönester Reinlichkeit / steter Gewisheit und unergründender Mannigfaltigkeit / reumiglich und hoch ausbreiten lassen” (Schottelius 1663/1967, 50).
11. “die Teutsche Sprache aus der Teutschen Sprache ferner zuerheben” (Schottelius 1663/1967, 98).
12. “Ob nun wol der Poet bemühet ist neue Erfindungen an das Liecht zu bringe / so kann er doch nichts finden / dessen Gleichheit nicht zuvor gewesen / oder noch auf der Welt wäre.” (Harsdörffer 1647-53/1969, II, 8)
13. “Die Erfindung wird entweder herbeigeführet *von dem Wort* / oder von dem Dinge selbst / darvon man handelt / oder von den Umständen desselben / oder von gehörigen *Gleichnissen*. Erstlich das *Wort* giebet eine Erfindung entweder in seinem angebornen Laut / unbekanter Deutung / oder mit versetzte *Buchstaben* / wann solche eine gantze Meinung schliessen / [...]” (Harsdörffer 1647-53/1969, I, 10)
14. “Hierbey were zu– betrachten / wie durch diese Reimkunst unsere Gedanken / (wie etwan die Auen durch ein Schöpf= oder Wasserrad/) trätlich / und vermehret werden” (Harsdörffer 1641-49/1968, I, 164)

15. "Ein *Letterwechsel* oder *anagramma* ist / wan die Letteren in einem / oder mehr Wörtern umgesetzt und verwechselt werden / also da heraus ein ganz anderes Wort / oder ganz andere meinung entstehen müsse." (Schottelius 1656/1976, 240)
16. "so kan man die Buchstaben versetzen und eine andere Meinung heraus bringen" (Harsdörffer 1647-53/1969, II, 17).
17. "Daß die Teutschen Namen mit Teutschen Endungen den Letterwechsel schliessen / daß nicht das Teutsche unter das Lateinische vermischet werde" (Harsdörffer 1647-53/1969, II, 17).
18. "Müssen in dem Wechselschluß alle Buchstaben eingebracht und keiner mit der andern fast gleichlautenden verändert werden; sonst ist es unartige Stimpelarbeit / und wider die Kunst" (Harsdörffer 1647-53/1969, II, 17).
19. "Sol der Letterwechsel eine ganze / oder zum wenigsten eine halbe Meinung geben" (Harsdörffer 1647-53/1969, II, 18).
20. "Es können auch viel ein= und zweysylbige Wörter umbgesetzt werden / und eine andere Meinung geben / als: Reimund : Dein Rum. Degenwert: Gewert den." (Harsdörffer 1647-53/1969, II, 19)
21. "Damit aber auch der dichterische künstler / so dieses nachkünsteln wil / nicht so viel kopf-brechens / mit verschreib- und ausleschung der buchstaben und nahmen / haben dürfte / so geb' ich ihm den raht / dass er ihm alle buchstaben aus karten oder spiel-blättern schneide / und dan ihrer so viel nehme als im nahmen begriffen sind / selbige verlege und wider lege / so lange / bis eines oder etliche worte aus dem nahmen zusammengebracht hat / die einen guten und folkommen sin haben / und die er zu seiner erfindung brauchen kan. Oder / damit er nicht so viel schneidens mit den spiel-blättern bedürfe / und die Gottlosen ihre Bibel auch ganz behalten / so wil ich ihm den raht geben / dass er nuhr auf ein karten- oder spiel-blatt / oder auf sonst etwas einen buchstaben schreibe / und sie also ganz verlege / und ümwechsele." (Zesen 1656/1977, 174)
22. "Es gibt Hilfsmittel (Karton, Schere, Blockbuchstaben). Es gibt herrliche Vor- und Begleitübungen: Puzzles (besonders die schwedischen, handgesägten), Zeitunglesen und Fernsehen (Legasthenietraining), einige gute Autoren, bewußtes Gehen mit beiden Füßen (hintereinander) auf dem Kies, Schüttelreime, komplizierte Stundenpläne oder gewisse Atem- und Abzähltechniken. Und es gibt die Strategie 'Steht der Tropfen, höhlt der Stein'. [...] Eine Menge Tüftelei also, der Autor konnte fast verschwinden [...]" (Pastior 1985, 82f.)
23. "Der Nutzen, der hieraus entstehen soll, kan gar nicht angegeben werden, u. die Vergnügung, die sich dabey befindet, gehöret nur vor die schwachen Geister, die sich gern mit Kleinigkeiten aufhalten. Der gute Ge-



schmack unserer heutigen Gelehrten hat dieselben längst verbannt, und die Satyren-Schreiber haben dieselben hier und dar lächerlich gemacht. [...] Wir halten davor, daß ein verwirrter Kopf, welcher sich durch höheres Nachdencken von seinem Fleiße bey der Nichtwürdigkeit der Sache nicht abhalten läßt, der beste Anagrammatist werden könne.” (Zedler 1732, 28)

24. “Sie ist aus Division, Subtraktion und Multiplikation, aber auch aus jener Vertauschbarkeit geboren, die von den Mathematikern ‘Permutation’, von den Philologen ‘Anagramm’ genannt wird, und deren Bedeutung auf folgendes hinauslief: Der Körper, er gleicht einem Satz –, der uns einzuladen scheint, ihn bis in seine Buchstaben zu zergliedern, damit sich in einer endlosen Reihe von Anagrammen aufs neue fügt, was er in Wahrheit enthält.” (Bellmer 1976, 95)
25. “Aufknacken von Wörtern und Wendungen in Bedeutungsklumpen von unbestimmter mittlerer Größe (sozusagen ein molekulares Cracking) und dann Zusammenfügen in irgendwo stupenden, aber exotisch einleuchtenden neuen semantischen Verbindungen” (Pastior 1994a, 40).
26. “permutative und viel engmaschigere Buchstabenalchemie (also ein inframolekulares Cracking)” (Pastior 1994a, 40).
27. “etwas, das nicht still steht und nicht weitergeht” (Pastior 1985, 9).
28. “Diese Reimart könnte man einen Wechselsatz nennen: dann wann man die ersten Wort (auf folgt) und die letzten zwey (Fleiß und Preiß) unverändert auf solcher Stelle behält / können die andern Wörter 39916800 / das ist / neun und dreissig tausendmaltausend / neunhundert und sechzehntausend / und achthundert mal versetzt werden / zu welcher Veränderung der allerfertigste Schreiber / der täglich 1200 Zeile abschriebe / ganze 91 Jahre / und 49 Tage würde haben müssen: wolte man aber die Reimwort Fleiß / Preiß / auch versetzen / und Krieg und Sieg dafür gebrauchen / so kan man noch etlich tausendmal öfter wechseln.” (Harsdörffer 1647-53/1969, I, 51f.)
29. “der Allmächtige Himmels- und Erdenschöpfer hat Himmel und Erden wi ein wechselrad eingerichtet / die Geschöpfe stat der wechselwörter genommen: Alle Welt Dinge wechseln / alle liben / alle hassen.” (Kuhlmann 1672, §21; cited in Neubauer 1978, 32)
30. “Der Gedanke, wie er sich erwähnt, reimwortläufig, in dem vertrackten Rhythmus mit dem transitorischen Moment von 123456 zu 615243. Um so ‘in aufbrechender Umarmung’ zu ‘denken’, hat die Sestine permanent ihr genetisches Kürzel ‘im Kopf’, eben diese Fähigkeit, wie ich nach einiger Erfahrung mit ihr denke, in ständig verschobenen Rückversicherungs- und prospektiven Falsifikationsschlaufen sich herzustellen.” (Pastior 1994a, 81f.)

31. “*Ein Zahl Reim* ist / darin eine gewisse Jahrzahl eingeschlossen und verfasset ist: Kan solche Zahl auff dreyerley weise aus Teutschen Wörtern füglich gebracht werden; entweder daß man der Lateiner M / D / C / X / V / J / nach bekannter Zahldeutung gelten lasse: Oder die Teutsche art gebrauche / daß nemlich A / E / J / O / U / W / S gelten müsse 10. 1. 5. 100. 1000. 500. 50. [...] Oder aber/dz nach art der Hebreer / in dem Teutschen jeder mitlauten der Buchstab seine Ziefer andeute/” (Schottelius 1656/1976, 263)
32. “Viele Gedichte aus der ‘*Wolkenpumpe*’ sind automatischen Gedichten verwandt. Sie sind wie die surrealistischen automatischen Gedichte unmittelbar niedergeschrieben, ohne Überlegung oder Überarbeitung. Dialektbildung, altertümelnde Klänge, Jahrmarktslatein, verwirrende Onomatopoesien und Wortspasmen sind in diesen Gedichten besonders auffallend. Die ‘*Wolkenpumpen*’ aber sind nicht nur automatische Gedichte, sondern schon Vorläufer meiner ‘*papiers déchirés*’, meiner ‘*Zerreissbilder*’, in denen die ‘*Wirklichkeit*’ und der ‘*Zufall*’ ungehemmt sich entwickeln können. Das Wesen von Leben und Vergehen ist durch das Zerreißen des Papiere oder der Zeichnung in das Bild einbezogen.“ (Arp 1953, 7)
33. “Wörter, Schlagworte, Sätze, die ich aus Tageszeitungen und besonders aus ihren Inseraten wählte, bildeten 1917 die Fundamente meiner Gedichte. Öfters bestimmte ich auch mit geschlossenen Augen Wörter und Sätze in den Zeitungen, indem ich sie mit Bleistift anstrich. Das Gedicht ‘*Weltwunder*’ ist so entstanden. Ich nannte diese Gedichte ‘*Arpaden*’. [...] Ich schlang und flocht leicht und improvisierend Wörter und Sätze um die aus der Zeitung gewählten Wörter und Sätze. Das Leben ist ein rätselhafter Hauch, und die Folge daraus kann nicht mehr als ein rätselhafter Hauch sein. [...] Wir meinten durch die Dinge hindurch in das Wesen des Lebens zu sehen, und darum ergriff uns ein Satz aus der Tageszeitung wenigstens so sehr wie der eines Dichterfürsten.“ (Arp 1963, 46)
34. “Dieses Blätlein muß heraus geschnidten / in fünff Ringe zertheilet / und auf fünff gleich-grosse Scheiben von Papyr / also aufeinander geheftet werden / daß man jeden Ring absonderlich umbdrehen kan / wann solchs geschehen / muß man dises fünfffache Blat wider hinein pappen.” (Cited in Hundt 2000, 283)
35. Leibniz calculated that the *Denckring* makes 97,209,600 combinations possible. Further, he recommended applying the ideas of *ars combinatoria* to all sciences (“*alle scientien*”). In 1671, he even declared that he was aiming at “*alle Notiones compositae* der ganzen Welt, in wenig *simplices* als deren *Alphabet reduciert*, und aus solches *alphabets combina-*

- tion* wiederumb alle dinge, samt ihren *theorematibus*, und was nur von ihnen zu *inventiren* müglich, *ordinata methodo*, mit der zeit zu finden ein weg gebahnet wird.” (Leibniz 1926, 160).
36. “Ist also dieses [word-generating procedure, JS] eine unfehlbare Richtigkeit / ein vollständiges Teutsches Wörterbuch zu verfassen / und beharren wir in der Meinung / daß alle solchen zusammen gesetzte Wörter / welche ihre Deutung würcken für gut Teutsch zulässig / sonderlich in den Gedichten / ob sie gleich sonst nicht gebräuchlich / [...]” (Harsdörffer 1651/1990, 518)
  37. “Erfindung der Reimwörter / wann man die Reimsilben auf dem dritten und vierten Ring suchet / und die Reimbuchstaben auf dem zweyten Ring darzu drehet” (Harsdörffer 1651/1990, 518)
  38. “Die wie oder rein zufällig anmutende Würfelwurf-Konstellation im Sandkasten zeigt im gelungenen Wurf von 6 ‘Zufallstreffern’ das ‘nach den Gesetzen des Zufalls’ (Hans Arp) geordnete Wort ‘C-A-U-S-A-L’: das Zufällige im Kausalen, das Kausalitätsprinzip des Zufalls, notwendigen Zufall und zufällige Notwendigkeit.” (Cited in Holeczek & v. Mengden 1992, 210)
  39. “Ihre Sprache, die bis dato einer traditionell und historisch bedingten syntaktischen Folge Subjekt-Prädikat-Objekt folgte, hat sich material verselbständigt zugunsten neuer sprachlicher Strukturen, zugunsten neuer akustischer und/oder visueller Arrangements. Durch überraschende Verteilungen in der syntaktischen und/oder semantischen Dimension entsteht im wörtlichen Sinne eine Poesie der Wörter, des Setzkastens, der Farben, der Töne. [...] Das Erzeugen ästhetischer Gebilde erfolgt nicht mehr aus Gefühlszwängen, aus mumifizierender oder mystifizierender Absicht; sondern auf der Basis bewußter Theorien, intellektueller (cartesianischer) Redlichkeit. [...] An die Stelle des Dichter-Sehers, des Inhalts- und Stimmungsjongleurs ist wieder der Handwerker getreten, der die Materialien handhabt, der die materialen Prozesse in Gang setzt und in Gang hält. Der Künstler heute realisiert Zustände auf der Basis von bewußter Theorie und bewußtem Experiment. Wir sprechen von einer experimentellen Poesie, insofern ihre jeweiligen singulären Realisationen ästhetische Verifikationen oder Falsifikationen bedeuten. Wir sprechen wieder von einer Poietike techne. Wir sprechen noch einmal von einer progressiven Ästhetik bzw. Poetik, deren bewußte Anwendung ein Fortschreiten der Literatur demonstriert, wie es schon immer den Fortschritt der Wissenschaft gab.” (Cited in Gomringer 1972, 165f.)
  40. “Der Monolog beginnt mit einem Computer-Text. Es sind neun synthetische Annäherungen an die Sprache des Mädchens. Die Tatsache,

daß gewisse Analogien zwischen dem zu Anfang unbewußten Zustand des Mädchens und der Unbewußtheit eines Computers bestehen, ließ diese erste Verwendung eines mit einer programmgesteuerten Maschine hergestellten Textes in einem Hörspiel gerechtfertigt erscheinen.

Diese Computertexte des Monologs werden in der Realisation übersetzt in eine durch ein kompliziertes Vocoder-Verfahren hergestellte synthetische Sprache, die im Verlauf des Monologs mehr und mehr abgebaut und von der natürlichen Stimme abgelöst wird.” (Cited in Schöning 1969, 58)

41. “Wenn ein Roman nicht wie ein Regenwurm in zehn Stücke geschnitten werden kann und jeder Teil bewegt sich selbst, dann taugt er nichts.” (Döblin 1917/1963, 21)
42. “[W]enn Datenplanspiele und Letternphantasien jenseits aller Metaphern im drucktechnischen Sinne real werden, wird der statische Raum der Bücher selbst zum zwischengeschalteten Medium, zu jenem beliebig (um)sortierbaren Karteikasten, in dem die Zettel potentieller Registermacher landen.” (Rieger 1997, 100)
43. “Als Buch-Labyrinth verstanden seien darum im folgenden auf materiell-visueller Ebene nicht-linear konstruierte Bücher, die den Leser explizit hin und her ‘schicken’, durch typographische Mittel, Leseanleitungen, nicht-lineare Numerierungen oder andere Signale, sowie Text-Baustein-Sammlungen.” (Schmitz-Emans 2002, 179).
44. “Endlich hatte Philine den herrlichen Einfall, die sämtlichen Bücher auf einem großen Tisch aufzuschlagen, wir setzten uns gegeneinander und lasen gegeneinander, und immer nur stellenweise, aus einem Buch wie aus einem andern. Das war nun eine rechte Lust! Wir glaubten wirklich in guter Gesellschaft zu sein, wo man für schicklich hält, irgend eine Materie zu lange fortsetzen, oder wohl gar gründlich erörtern zu wollen; wir glaubten in lebhafter Gesellschaft zu sein, wo keins das andere zum Wort kommen läßt. Diese Unterhaltung geben wir uns regelmäßig alle Tage und werden dadurch nach und nach so gelehrt, daß wir uns selbst darüber verwundern. Schon finden wir nichts Neues mehr unter der Sonne, zu allem bietet uns unsere Wissenschaft einen Beleg an. Wir variieren diese Art, uns zu unterrichten auf gar vielerlei Weise. Manchmal lesen wir nach einer alten verdorbenen Sanduhr, die in einigen Minuten ausgelaufen ist. Schnell dreht sie das andere herum und fängt aus einem Buche zu lesen an, und kaum ist wieder Sand im untern Glase, so beginnt das andere auch schon wieder seinen Spruch, und so studieren wir wirklich auf wahrhaft akademische Weise, nur daß wir kürzere Stunden haben, und unsere Studien äußerst mannigfaltig sind.” (Goethe 1950, 558)

45. "Wann man nun das Register machen will / so schreibet man den Inhalt / gehöriger Massen / auf ein Papyr / schneidet es in absonderliche Stücklein / und leget jedes in sein Buchstabfach: von dar nimmst man sie zuletzt wieder heraus / ordnet einen Buchstaben nach dem andern / und klebet entweder die Papyrlein ordentlich auf / oder schreibt sie noch einmal." (Harsdörffer 1651/1990, 57)
46. "Für das Barock sind hybride Textformen die Folge, die hart an den Grenzen des Buches operieren. Im Zeichen von Ökonomie und Effizienz barocker Datenspeicherung erhält die lineare Organisation von Büchern eine mediale Konkurrenz durch alternative Aufschreibeformen, die Zugriffe durch Register organisieren und damit eine strikt lineare Abfolge des Buches durch andere Präsentationsweisen – etwa die Möglichkeit der Synopsen – überflüssig machen wollen." (Rieger 1997, 88)
47. "Es wäre daher die Frage, ob nicht eine Sammlung von Aufsätzen nützte und gefiele, worin Ideen aus allen Wissenschaften ohne bestimmtes gerades Ziel – weder künstlerisches noch wissenschaftliches – sich nicht wie Gifte, sondern wie Karten mischten und folglich, ähnlich dem Lessingschen geistigen Würfeln, dem etwas eintrügen, der durch *Spiele* zu gewinnen wüßte; was aber die Sammlung anlangt, so hab' ich sie und vermehre sie täglich, schon bloß deshalb, um den Kopf so frei zu machen, als das Herz sein soll." (Jean Paul 1804/1963, 202f.)
48. "die ähnlichen Verhältnisse *inkommensurabler* (unanmeßbarer) Größen [zu finden], d. h. die Ähnlichkeiten zwischen Körper- und Geisterwelt (z. B. Sonne und Wahrheit), mit andern Worten, die Gleichung zwischen sich und außen, mithin zwischen zwei Anschauungen" (Jean Paul 1804/1963, 172).
49. "Diesentimentale Reise zum Exporteurtreffen in Drudenmußerst vollzogen werden. Das Material liegt bereit, wie die Donau und die Anhäufungen von Pflanzen, Steinen und Menschen an ihren Ufern für viele Reisen und Nebenausflüge nach Wahl bereitliegen. Das Material ist alphabetisch geordnet, damit Sie es mühelos auffinden. Wie in einem Lexikon." (Okopenko 1970, 5)
50. "Die Hinweise, die Ihnen von Etappe zu Etappe die Fortsetzung der Reise ermöglichen sollen und die Sie daher vielleicht mit Vorrang beachten werden, sind *schräg gedruckt*." (Okopenko 1970, 5)
51. "Eventuelle Leser meines 'Lexikon-Romans', vielleicht von damals her neurotisiert im Gebrauch meiner Bücher, seien dahin beruhigt, daß die 'Meteoriten' vollends ohne Spielregel lesbar sind. Die Freiheit ist nun unscheinbar und total. Am stoffgetreuesten ist es, wenn man in diesem Buch einfach blättert, man kann es aber natürlich auch vom Anfang bis zum Ende lesen oder nach irgendwelchen privatmathematischen Ge-

- wohnheiten.” (Okopenko 1976, 12)
52. “das man aus dem Schrank nimmt, wahllos aufschlägt, in dem man auf jeder Seite anfangen kann zu lesen, und in dem man immer, gleich wo man aufschlägt, den Einstieg findet, in dem es also unwichtig ist, was vorher oder nachher passiert” (Baier 1972, 154f.).
  53. “schäuffelens lotterrie romane sind texte, die satzweise auf papierstreifen gedruckt sind. [...] die sätze sind auf holzfreies, getöntes buchungspapier gedruckt und handgedreht. beide bisher erschienenen editionen enthalten über 60 000 röllchen. die röllchen sind nach dem prinzip des zufalls in buchenholzkästchen der maße 5,5x15x11 cm eingesetzt. auf den deckeln der kästchen befindet sich ein serigrafischer aufdruck. die kästchen sind gewachst. zum hygienisch-distanzierten umgang mit dem sprachmaterial wird eine anatomische pinzette mitgeliefert.” (Cited in Schulze 2000, 141)
  54. “Nehmen Sie das Prinzip für die Durchführung, denken Sie an den ersten Computer, erweitern Sie den Roman durch eigene Weiterknüpfung an Reizwörter, am besten: schreiben Sie ein Buch, das meines in seiner Kleinheit festnagelt.” (Okopenko 1970, 7)
  55. “von vorneherein als einen Anfang, als Fragment, als immerwährendes ‘work in progress’, das jeden Leser zur fortlaufenden Mitarbeit einlädt” (Marti 1971, blurb).
  56. “Herr A. schrieb das erste Kapitel; dieses ging postwendend an Herrn B. Als dieser Kapitel 2 beendet hatte, bekam Herr C. die ersten beiden, um ein drittes zu schreiben. Und so ging es fort; jeder der XII Dichter spann in *seiner* Art und in *seinem* Stil den Faden weiter.” (Cited in Estermann 1992, 12)
  57. “Das Gedicht will die Verschlungenheit des Menschen in den mechanistischen Prozeß verdeutlichen. In typischer Verkürzung zeigt es den Widerstreit der vox humana mit einer sie bedrohenden, verstrickenden und zerstörenden Welt, deren Takt und Geräuschablauf unentrinnbar sind.” (Ball 1927, 86)
  58. “jeder brachte geeignetes material heran, wir spielten uns immer besser aufeinander ein, warfen uns die sätze wie bälle zu. Wenn auch jeder für sich die erschlossenen möglichkeiten weiterverfolgte, erwies sich gerade die montage als eine technik, die gemeinschaftsarbeit besonders begünstigte.” (Rühm 1997, 25)
  59. “All diese gedruckten Briefe sind kein nachträglicher Effekt eines ihnen vorhergehenden Lebens, denn sie erzeugen erst als gedruckte eine Realität, die außerhalb des Briefes nicht existiert.” (Hahn 1990, 25)
  60. “Schon vor dem ersten Transport sind Briefe von dieser Spaltung durchzogen: Sie haben einen Ort des Schreibens und einen des Empfang-

gens; ihr Schicksal ist die Zirkelbewegung einer Schickung. Damit sie in die erweiterte Zirkulation des Druckens eingehen können, bedarf es einer Sammelstelle für Briefe – einer Post sozusagen –, die das Weiter-schicken an die Öffentlichkeit organisiert.” (Hahn 1990, 16)

61. “nutzt den Postversand-Roman, schreibt uns, ruft uns an, bombardiert uns verflucht noch mal, wir antworten Euch in den nächsten Lieferungen. Faecke/Vostell: die beiden guten Briefkastenonkels, unsere Frauen helfen uns *und* sind ganz dabei, wir verteilen die Lieferungen auf der Straße soweit unser Geld reicht und machen einen Film drüber in Kölner Obdachlosen-Vierteln, den Ihr kostenlos an Kölner Hauswänden sehen könnt, schickt uns Informationen, ruft uns an unter

735335 Faecke

oder

517783 Vostell

wir antworten direkt *mit neuen Ideen, wir haben genug davon*, wenn Ihr Geld schicken wollt, OK., schickt uns *auf jeden Fall* Informationen, Manuskripte etc., wir wollen Bücher haben, die nicht mehr als 1 Mark kosten, wir wollen Bücher haben, die, nach Wahl durch ein akzeptables Gremium, gratis verteilt werden (Kostenpunkt jährlich für alle wichtigen Bücher in der BRD: 500 Millionen Mark). [...]

Konkreter: Denk daran: Deine Antwort auf das, was Du bezahlt hast, wird von uns honoriert in Form einer Antwort in der nächsten Lieferung.

Was kommt auf Dich, was kommt auf uns zu? Tu uns den Gefallen: spiel mit, tritt Deinen Nachbarn in den Arsch, *tritt dich selbst in den Arsch, zieh Deine alten Schubladen auf, geh ans Telefon, setz Dich ins Auto und fahr zu uns, hör mit uns die alten Lieder von dazumal, und wenn Du uns nicht passt, schmeissen wir Dich wieder raus!*, fang endlich selbst an zu schreiben, schreib zusammen mit uns dieses Buch [...]"(Faecke & Vostell 1970; italics represent handwritten annotations in original)

62. “Jede Kommunikation heißt in Zukunft jeder mit jedem auf der Welt, so wie jedes Ereignis auf der Welt mit jedem Ereignis auf der Welt zu tun hat. [...] Und formal gesehen glaube ich, daß zum Beispiel die Zukunft des Fernsehens darin besteht, daß alle Fernseher im Medium Fernsehen selbst zu Wort kommen, also daß das ein Ende findet, daß Millionen das konsumieren, was von wenigen Redakteuren gemacht wird. Das heißt, in Zukunft produzieren die Hörer oder die Seher selbst das Programm.” (Faecke & Vostell 1970)

63. “Der Rundfunk wäre der denkbar großartigste Kommunikationsapparat des öffentlichen Lebens, ein ungeheures Kanalsystem, d.h., er wäre es, wenn er es verstünde, nicht nur auszusenden, sondern auch zu empfan-

gen, also den Zuhörer nicht nur hören, sondern auch sprechen zu machen und ihn nicht zu isolieren, sondern ihn in Beziehung zu setzen. Der Rundfunk müsste demnach aus dem Lieferantentum herausgehen und den Hörer als Lieferanten organisieren.” (Brecht 1932/1992, 553)

## REFERENCES

---

### *Literary Works*

- Adelung, Johann Christoph (1782/1971) *Umständliches Lehrge-  
bäude der Deutschen Sprache, zur Erläuterung der Deutschen  
Sprachlehre für Schulen*, vol. 1. Reprint Hildesheim, New York:  
Olms.
- Adrian X, Robert (1989) “Elektronischer Raum“, *Kunstforum inter-  
national* 103, 142-147.
- Arp, Hans (1953) *Wortträume und schwarze Sterne. Auswahl aus den  
Gedichten der Jahre 1911-1952*. Wiesbaden: Limes.
- Arp, Hans (1963) *Gesammelte Gedichte*, vol. I: Gedichte 1903-1930.  
Zurich: Arche.
- Ball, Hugo (1927) *Die Flucht aus der Zeit*. Munich, Leipzig: Duncker  
& Humblot.
- Ball, Hugo (1974) *Flight out of Time*. Ed. John Elderfield. New York:  
Viking.
- Bärmann, Georg Nikolaus (1829/1972) *Neunhundert neun und  
neunzig und noch etliche Almanachs-Lustspiele durch den Wür-  
fel. Das ist: Almanach dramatischer Spiele für die Jahre 1829 bis  
1961*. Reprint Munich: Heimeran.
- Bellmer, Hans (1976) *Die Puppe*. Frankfurt am Main et al.: Ullstein.
- Bense, Max (1961) *bestandteile des vorüber – dünnschliffe mischtexte  
montagen*. Cologne, Berlin: Kiepenheuer & Witsch.
- Brecht, Bertolt (1932/1992) “Der Rundfunk als Kommunikations-  
apparat“ in *Werke. Große kommentierte Berliner und Frankfurter  
Ausgabe*, vol. 21: *Schriften 1*, 552-557. Ed. Werner Hecht, Jan  
Knopf, Werner Mittenzwei & Klaus-Detlef Müller. Berlin, Wei-  
mar, Frankfurt am Main: Aufbau/Suhrkamp.



- Carlyle, Thomas (1899) *The Works of Thomas Carlyle*, vol. XXIV: *Wilhelm Meister's Apprenticeship and Travels*. Translated from the German of Goethe. London: Chapman & Hall.
- Döblin, Alfred (1917/1963) "Bemerkungen zum Roman" in *Aufsätze zur Literatur*, Olten, Freiburg: Walter.
- Eichendorff, Joseph von (1993) *Sämtliche Werke des Freiherrn Joseph von Eichendorff. Historisch-kritische Ausgabe*. Ed. Hermann Kunisch & Helmut Koopmann, vol. I/1: Gedichte. Stuttgart, Berlin, Cologne: Kohlhammer.
- Enzensberger, Hans Magnus (1970) "Baukasten zu einer Theorie der Medien", *Kursbuch 20*, 159-186.
- Faecke, Peter & Vostell, Wolf (1970) *Postversandroman*. Neuwied: Luchterhand.
- Goethe, Johann Wolfgang (1950) *Goethes Werke. Hamburger Ausgabe*, vol. VII. Ed. Erich Trunz. Hamburg: Wegner. Gomringer, Eugen (1972) *konkrete poesie. deutschsprachige autoren*. Stuttgart: Reclam.
- Harsdörffer, Georg Philipp (1641-49/1968) *Frauenzimmer Gesprächspiele*, 8 vols. Reprint Tübingen: Niemeyer.
- Harsdörffer, Georg Philipp (1647-53/1969) *Poetischer Trichter*. Reprint Darmstadt: Wissenschaftliche Buchgesellschaft.
- Harsdörffer, Georg Philipp (1651/1990) *Deliciae mathematicae et physicae. Der Mathematischen und philosophischen Erquickstunden Zweyter Theil*. Reprint Frankfurt am Main.
- Jean Paul (1804/1963) *Vorschule der Ästhetik in Werke*, vol. V. Ed. Norbert Miller. Munich: Hanser.
- Jean Paul (1973) *Horn of Oberon: Jean Paul Richter's School for Aesthetics*. Transl. Margaret R. Hale. Detroit: Wayne State University Press.
- Kuhlmann, Quirinus (1671/1971) *Himmlische Libes-küsse*. Reprint Tübingen: Niemeyer.
- Kuhlmann, Quirinus (1672) *Geschicht-Herold oder Freudige und traurige Begebenheiten Hoher und Nidriger Personen*. Jena 1672.
- Leibniz, Gottfried Wilhelm (1926) *Sämtliche Schriften und Briefe*, 2. series, vol. 1. Darmstadt.
- Marti, Kurt (1971) *Abratzky oder Die kleine Blockhütte. Lexikon in einem Band*. Neuwied: Luchterhand.

- Motte, Warren F., jr. (ed.) (1998) *Oulipo: A Primer of Potential Literature*. Normal, IL: Dalkey Archive Press.
- Müller, Herta (1993) *Der Wächter nimmt seinen Kamm. Vom Weggehen und Ausscheren*. Reinbek: Rowohlt.
- Okopenko, Andreas (1970) *Lexikon Roman einer sentimental Reise zum Exporteurtreffen in Druden*. Salzburg: Residenz.
- Okopenko, Andreas (1976) *Meteoriten*. Salzburg: Residenz.
- Oulipo (1981) *Atlas de littérature potentielle*. Paris: Gallimard.
- Pastior, Oskar (1985) *Anagrammgedichte*. Munich: Verlag Klaus G. Renner.
- Pastior, Oskar (1994a) *Das Unding an sich. Frankfurter Vorlesungen*. Frankfurt am Main: Suhrkamp.
- Pastior, Oskar (1994b) *Eine kleine Kunstmaschine. 34 Sestinen*. Munich, Vienna: Hanser.
- Queneau, Raymond (1973) *Le voyage en Grèce*. Paris: Gallimard.
- Schäuffelen, Konrad Balder (1964) *deus ex scatola*. Limited edition of 50 boxes.
- Schmit, Tomas (1966) *Verlegerbesteck*. Limited edition of 60 boxes.
- Schöning, Klaus (ed.) (1969) *Neues Hörspiel. Texte Partituren*. Frankfurt am Main: Suhrkamp.
- Schottelius, Justus Georg (1656/1976) *Teutsche Vers- oder Reimkunst. Reprint Hildesheim, New York: Olms*.
- Schottelius, Justus Georg (1663/1967) *Ausführliche Arbeit Von der Teutschen HauptSprache*. Reprint Tübingen.
- Thomkins, André (1965) *dogma-mot*. Limited edition of 111 boxes.
- Tzara, Tristan (1975) *Œuvres complètes*, vol. I. Ed. Henri Béhar. Paris: Flammarion.
- Wolf, Ror (1990) *Raoul Tranchirers Welt- und Wirklichkeitslehre aus dem Reich des Fleisches, der Erde, der Luft, des Wassers und der Gefühle*. Gießen: Anabas.
- Zedler, Johann Heinrich (1732) *Grosses vollständiges Universal-Lexicon Aller Wissenschaften und Künste*, vol. 2. Halle, Leipzig.
- Zesen, Philipp von (1656/1977) *Sämtliche Werke, vol. X/1: Hoch-Deutscher Helikon*. Ed. Ferdinand van Ingen, Ulrich Maché & Volker Meid. Berlin, New York: de Gruyter.
- Zürn, Unica (1988) *Gesamtausgabe*, vol. I: *Anagramme*. Berlin: Brinkmann & Bose.

*Critical Works*

- Aarseth, Espen (1997) *Cybertext: Perspectives on Ergodic Literature*. Baltimore: Johns Hopkins University Press.
- Baier, Lothar (ed.) (1972) *Über Ror Wolf*. Frankfurt am Main: Suhrkamp.
- Chaouli, Michel (2001) "Was bedeutet: Online lesen? Über die Möglichkeit des Archivs im Cyberspace" in Arnold, Heinz Ludwig & Simanowski, Roberto (eds.) *Digitale Literatur*, 65-74. Munich: TEXT + KRITIK.
- Cramer, Florian (2000) "Combinatory Poetry and Literature in the Internet", [http://userpage.fu-berlin.de/~cantsin/homepage/writings/net\\_literature/permutations/kassel\\_2000//combinatory\\_poetry.pdf](http://userpage.fu-berlin.de/~cantsin/homepage/writings/net_literature/permutations/kassel_2000//combinatory_poetry.pdf)
- Döhl, Reinhard (1988) *Das Neue Hörspiel. Geschichte und Typologie des Hörspiels*. Darmstadt: Wissenschaftliche Buchgesellschaft.
- Döhl, Reinhard (1996) "Hans Arp and Zurich Dada" in Pichon, Brigitte & Karl Riha (eds.) *Dada Zurich: A Clown's Game from Nothing*, 112-124. New York: G.K. Hall.
- Döhl, Reinhard (1997) "Vom Computertext zur Netzkunst. Vom Bleisatz zum Hypertext", [http://www.uni-stuttgart.de/ndl1/computertext\\_netzkunst.htm](http://www.uni-stuttgart.de/ndl1/computertext_netzkunst.htm)
- Eskelinen, Markku (2001) "Cybertext Theory and Literary Studies, A User's Manual", <http://www.altx.com/ebr/ebr12/eskel.htm>
- Estermann, Alfred (1992) "'Gemeinschaftliches Arbeiten' – ein 'mißliches Ding?'" Über den 'Roman der Zwölf' und andere Koproduktionen" in Bahr, Hermann et al.: *Der Roman der Zwölf*, 9-33. Frankfurt am Main: Insel.
- Gardt, Andreas (1994) *Sprachreflexion in Barock und Frühaufklärung. Entwürfe von Böhme bis Leibniz*. Berlin, New York: de Gruyter.
- Gendolla, Peter (1992) *Anatomien der Puppe. Zur Geschichte des MaschinenMenschen bei Jean Paul, E.T.A. Hoffmann, Villiers de l'Isle Adam und Hans Bellmer*. Heidelberg: Winter.
- Hahn, Barbara (1990) "Antworten Sie mir!" *Rahel Levin Varnhagens Briefwechsel*. Basel: Stroemfeld/Roter Stern.
- Hayles, N. Katherine (1999) *How We Became Posthuman. Virtual Bodies in Cybernetics, Literature, and Informatics*. Chicago, London: Chicago University Press.

- Holeczek, Bernhard & Mengden, Lisa von (1992) *Zufall als Prinzip. Spielwelt, Methode und System in der Kunst des 20. Jahrhunderts*. Heidelberg: Edition Braus.
- Hundt, Markus (2000) *'Spracharbeit' im 17. Jahrhundert. Studien zur Georg Philipp Harsdörffer, Justus Georg Schottelius und Christian Gueintz*. Berlin, New York: de Gruyter.
- Krause, Manfred & Schaudt, Götz F. (1967) *Computer-Lyrik. Poesie aus dem Elektronenrechner*. Düsseldorf: Droste.
- Kühn, Renate (1994) *Das Rosenbaertlein-Experiment. Studien zum Anagramm*. Bielefeld: Aisthesis.
- Landow, George P. (1994) "What's a Critic to Do? Critical Theory in the Age of Hypertext" in Landow (ed.) *Hyper/Text/Theory*, 1-48. London, Baltimore: Johns Hopkins University Press.
- Müller, Götz (1988) *Jean Pauls Exzerpte*. Würzburg: Königshausen & Neumann.
- Murphy, Richard (1998) *Theorizing the Avant-Garde. Modernism, Expressionism, and the Problem of Postmodernity*. Cambridge: Cambridge University Press.
- Neubauer, John (1978) *Symbolismus und symbolische Logik. Die Idee der ars combinatoria in der Entwicklung der modernen Dichtung*. Munich: Fink.
- Parr, Rolf (2000) *Interdiskursive As-Sociation. Studien zu literarisch-kulturellen Gruppierungen zwischen Vormärz und Weimarer Republik*. Tübingen: Niemeyer.
- Rieger, Stefan (1997) *Speichern/Merken. Die künstlichen Intelligenzen des Barock*. Munich: Fink.
- Riha, Karl (1971) *Cross-Reading und Cross-Talking. Zitat-Collagen als poetische und satirische Technik*. Stuttgart: Metzler.
- Rühm, Gerhard (1997) "das phänomen 'wiener gruppe' im wien der fünfziger und sechziger jahre" in Weibel, Peter (ed.) *die wiener gruppe: ein moment der moderne 1954-1960/die visuellen arbeiten und die aktionen / the vienna group: a moment of modernity 1954-1960/the visual works and the actions*, 16-29. Vienna, New York: Springer.
- Schmitz-Emans, Monika (2002) "Labyrinthbücher als Spielanleitungen", *Paragrana* 11.1, 179-207.

- Schulze, Holger (2000) *Das aleatorische Spiel. Erkundung und Anwendung der nichtintentionalen Werkgenese im 20. Jahrhundert*. Munich: Fink.
- Seibert, Peter (1993) *Der literarische Salon. Literatur und Geselligkeit zwischen Aufklärung und Vormärz*. Stuttgart, Weimar: Metzler.
- Starobinski, Jean (1979) *Words upon Words. The Anagrams of Ferdinand de Saussure*. Transl. Olivia Emmet. New Haven: Yale University Press.
- Stickel, Gerhard (1967) "Monte-Carlo-Texte: Automatische Manipulation von sprachlichen Einheiten" in Simmat, William E. (ed.) *Kunst aus dem Computer*, 53-57. Stuttgart: Nadolski.
- Strauss, Neil (ed.) (1993) *Radiotext(e)*. New York: Semiotext(e).
- Ueding, Gert (2004) "Episches Atemholen – Über Jean Pauls widerspenstiges Erzählen", *Jahrbuch der Jean Paul Gesellschaft* 39, 61-82.
- Winkler, Hartmut (2002) "Discourses, Schemata, Technology, Monuments: Outline for a Theory of Cultural Continuity", *Configurations* 10.1, 91-109.
- Winkler, Hartmut (2004) *Diskursökonomie. Versuch über die innere Ökonomie der Medien*. Frankfurt am Main: Suhrkamp.