THE FLUSSER-HYPERTEXT: “ELECTRONIC BOOK PROTOTYPE 2”

By Daniel Irrgang

“I am but a pre-text for this work!”
– Vilém Flusser (1991)

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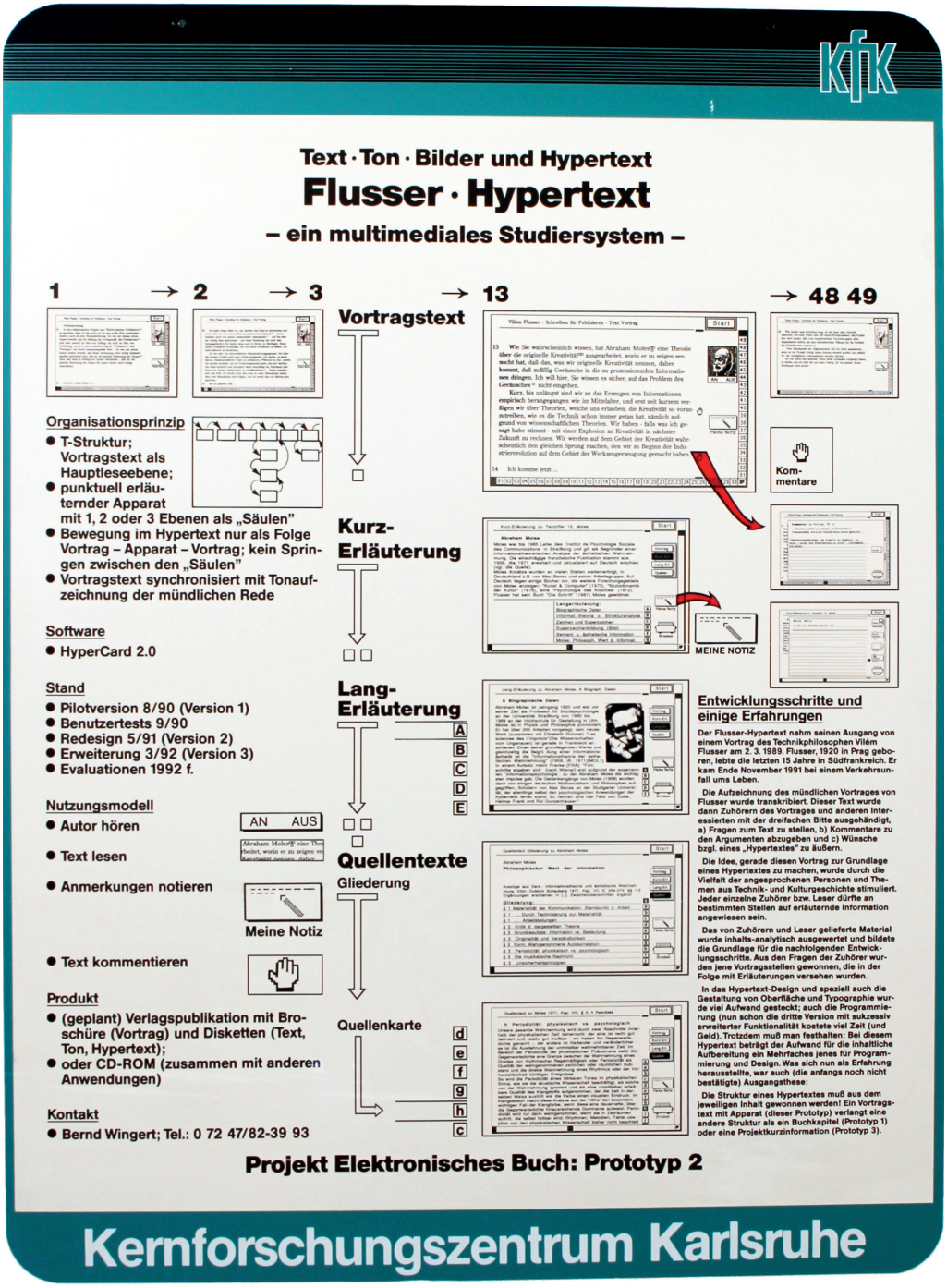

Fig. 1: "Text, audio, images and hypertext. Flusser-Hypertext – a multimedia study system. Project electronic book: Prototype 2," conference presentation poster, ITAS, Karlsruhe Nuclear Research Center (undated, ca. 1990). Source: Vilém Flusser Archive.

The 'Flusser-Hypertext' was developed as part of a research project on electronic publishing, initiated around 1988 at the Institute for Technology Assessment and Systems Analysis (ITAS) of the Karlsruhe Nuclear Research Center (today: Karlsruhe Institute of Technology), Germany. It embodies an experimental approach towards the new writing, reading and publishing possibilities of hypertext authoring tools available at the time. Besides its technological challenges the project raised significant cultural and hermeneutical questions: How do 'non-linear' strategies of reading and interaction (e.g. by using annotation tools) as well as multi-modal elements (text, image, audio) affect the practice of reading – a basic cultural technique – itself? With this perspective, the Flusser-Hypertext addressed media theoretical questions that would become increasingly popular during the 1990s.[2]

The hypertext system is based on the lecture "Schreiben für Publizieren" [writing for publishing] delivered by the Czech cultural philosopher and media theorist Vilém Flusser (1920–1991) at ITAS on March 2, 1989.[3] The lecture was recorded, transcribed[4] and supplemented with written annotations relating to topics or sources Flusser had mentioned or pointed to while he spoke (as usual in his case only loosely, if at all, consulting his prepared manuscript) – a process involving extensive research by the ITAS team as well as additional interviews with Flusser at his home in Robion, France.[5] The audio recording, text transcription, images, and supplementary material constitute the core content of the Flusser-Hypertext. A notepad or commentary section which could be used by the readers – or users – to add their own thoughts gives the application an additional dimension of interactivity.

The Flusser-Hypertext was developed as a case study within the research project "Elektronisches Buch" [electronic book] by the ITAS researchers Knud Böhle, Ulrich Riehm and Bernd Wingert, supported by a group of freelance programmers. Funded by the Department for Technology Assessment of the German Federal Ministry of Research and Technology, the project conducted basic research on, including the development of a prototype for "an innovative electronic presentation form for results of scientific projects."[6] The hypertext is the second of three prototypes developed as

Quote title page: Vilém Flusser to Bernd Wingert during an interview to complete the hypertext's supplementary material; May 15, 1991, Robion, France (quoted in Bernd Wingert, Der Flusser-Hypertext. Einige Erfahrungen aus Entwickler- und Nutzersicht, in: *Bodenlos – Vilém Flusser und die Künste*, ed. Siegfried Zielinski and Daniel Irrgang (Berlin 2015), pp. 78–79, here 78; transl. D.I.

2 Jakob Nielsen, *Multimedia, Hypertext und Internet. Grundlagen und Praxis des elektronischen Publizierens* (Braunschweig and Wiesbaden 1996).

3 Daniel Irrgang and Marcel R. Marburger, Vilém Flusser – A Biography, in: *Flusseriana. An Intellectual Toolbox*, ed. Siegfried Zielinski, Peter Weibel and Daniel Irrgang (Minneapolis 2015), pp. 452–519; see p. 510 for the hypertext project.

4 The transcription of Flusser's lecture, along with the transcription of the subsequent discussion between Flusser, Bernd Wingert, and the audience, is available at the Vilém Flusser Archive (doc. ref.: Conference 22, documents 4 and 5).

5 Wingert, Der Flusser-Hypertext.

6 Knud Böhle, *Ulrich Riehm and Bernd Wingert, Vom allmählichen Verfertigen elektronischer Bücher. Ein Erfahrungsbericht* (Frankfurt/M. and New York 1997), pp. xiii; transl. D.I.

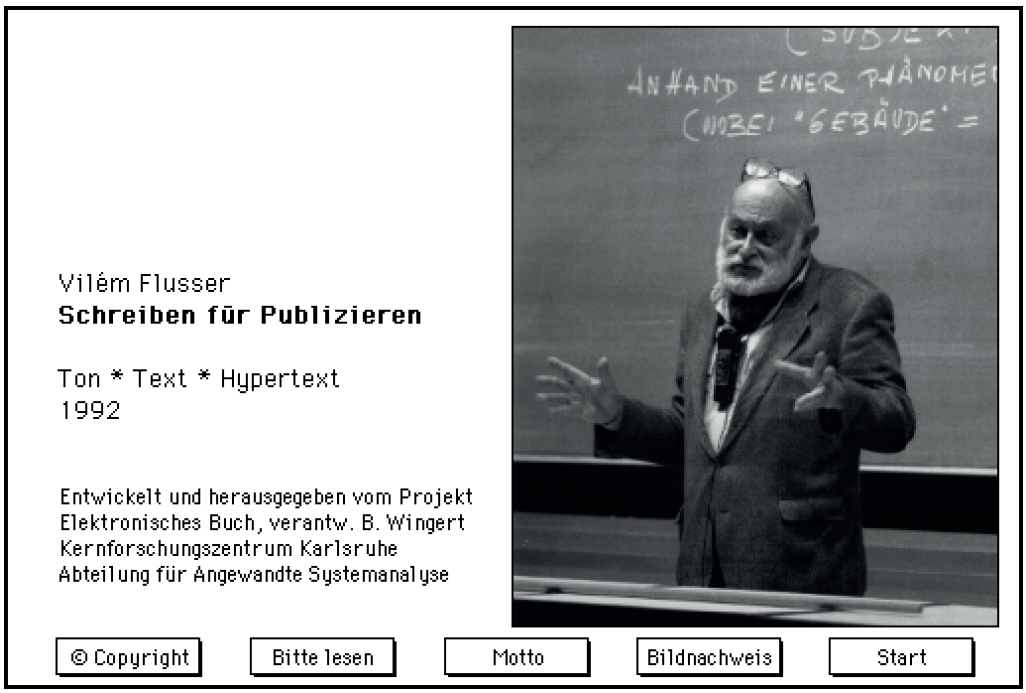

Fig. 2: Title window. Source: Vilém Flusser Archive.

case studies for the research project. One aspect of the project was to investigate new approaches to electronic publishing by exploring the possibilities of interactive reading that involved the at the time new possibilities of hypertext and multimedia. The prototypes are built with and run on the authoring system Apple HyperCard 2.0 which displays and organizes text and image content with a GUI resembling file cards, making use of the already established desktop/office metaphor. Thus, also the Flusser-Hypertext, in its attempt to overcome the limitations of printed media, draws on a metaphor which had the advantage to accessibly combine "the concrete with the abstract in a highly satisfying way."[7]

Such an attempt to transform Flusser's words into a multimedia hypertext means to take his theories and pleas for a future "telematic society"[8] seriously. Building on earlier studies in communication and information theory, Flusser developed his later media theory in the 1970s and mostly during the 1980s. Towards the end of this decade Flusser was widely known for his analyses of the upcoming information society, claiming (similar to Marshall McLuhan) the end of writing as the dominant discursive form of information storage and distribution. According to Flusser, written text and its

7 Alan Kay, User Interfwace. A Personal View, in: *multiMEDIA. From Wagner to virtual reality*, ed. Randall Packer and Ken Jordan (New York 2001), pp.121–131, here 130.

8 Vilém Flusser, *Ins Universum der technischen Bilder* (Göttingen 1985).

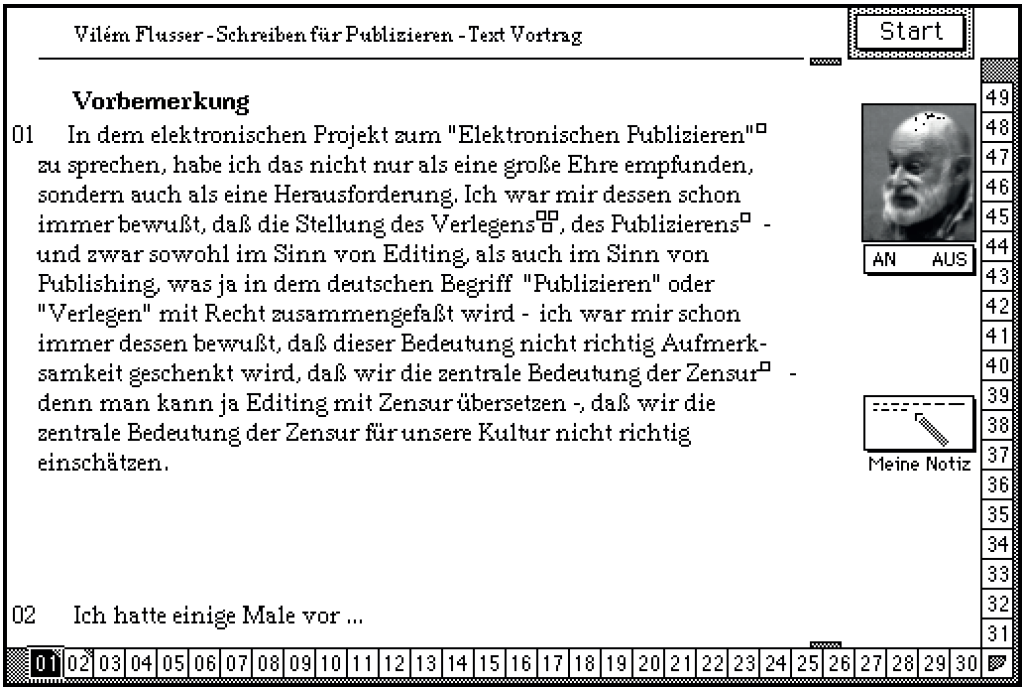

Fig. 3: First file card with first lines of the lecture transcript. Source: Vilém Flusser Archive..

'linear' structure – which has dictated structures of discourse, narratives and historiography since centuries – is slowly vanishing and will soon be replaced by what he called 'technical images' or 'synthetic images'. Those images of abstract concepts and models calculated by computers would replace written text, as there would be no need to take the 'detour' of transcoding information into letters.[9] Flusser described alternative representations of electronic text – such as hypertexts – as transitional phenomena on the way to overcome the yet dominant textual linearity,[10] while societies are, in Flusser's projection, continuously shifting towards a new "universe of technical images."[11] In one of Flusser's early structural or ontological distinctions between text and image, laid out in his widely received article "Line and surface,"[12] he describes the perception of the former as a strictly linear and analytical process and the latter as a process of "synthesis followed by analysis" in which "we may seize the totality of the picture

9 A, from today's perspective, rather problematic conclusion since informatization or digitalization appears to lead to a convergence of text and image rather than to the extinction of written text, while boosting text production and reception to levels never seen before.

10 Vilém Flusser, Hypertext. Über das Schicksal von Büchern. *NZZ Folio* 10 (October 1991), pp. 35–36.

11 Flusser, Ins Universum der technischen Bilder; Baruch Gottlieb, Hypertext, in: *Flusseriana*, ed. Zielinski, Weibel and Irrgang, pp. 212–214.

12 Vilém Flusser, Line and Surface. *Main Currents in Modern Thought* 29/3 (1973), pp. 100–106.

Fig. 4: Biographical reference on Abraham A. Moles, one of the pioneers of information aesthetics. Source: Vilém Flusser Archive.

at a glance, so to speak, and then proceed to analyze it."[13] It was Flusser's hope that future technical images may contain the same informational richness and efficiency as traditional images while gaining the analytical capacity similar or superior to written text.

There are certain parallels between Flusser's theory and the conceptual basis of the Flusser-Hypertext, since its "spatial arrangement of texts allows reading to partly free itself from the boundaries of the linear."[14] However, as Peter Wiechens points out it in his analysis of the Flusser-Hypertext,[15] the system does not put an end to the lecture's or text's linear structure but rather *adds* a dimension of simultaneity while its multimodal features (text, image, sound) and its GUI which make those features easily accessible.[16]

The Flusser-Hypertext is organized in a 'T-structure' which arranges the 'file card' windows of HyperCard: The horizontal level contains the transcribed lecture as well as its original recording as text and audio content (fig. 3). The 'ver-

13 Ibid., p. 101.

14 Bernd Wingert, Kann man Hypertexte lesen?, in: *Literatur im Informationszeitalter*, ed. Dirk Matejovski and Friedrich Kittler (Frankfurt/M. and New York 1996), pp. 184–218, here 200; transl. D.I.

15 Peter Wiechens, Hypertext und Künstlerbuch. Das Buch nach dem Ende des Buches, in: *Einführung in die Kulturwissenschaft*, ed. Thomas Düllo (Münster 1998), pp. 328–346.

16 For the notion of simultaneity in interface aesthetics see Florian Hadler and Daniel Irrgang, Instant Sensemaking, Immersion and Invisibility. Notes on the Genealogy of Interface Paradigms. *Punctum* 1 (2015), pp. 7–25.

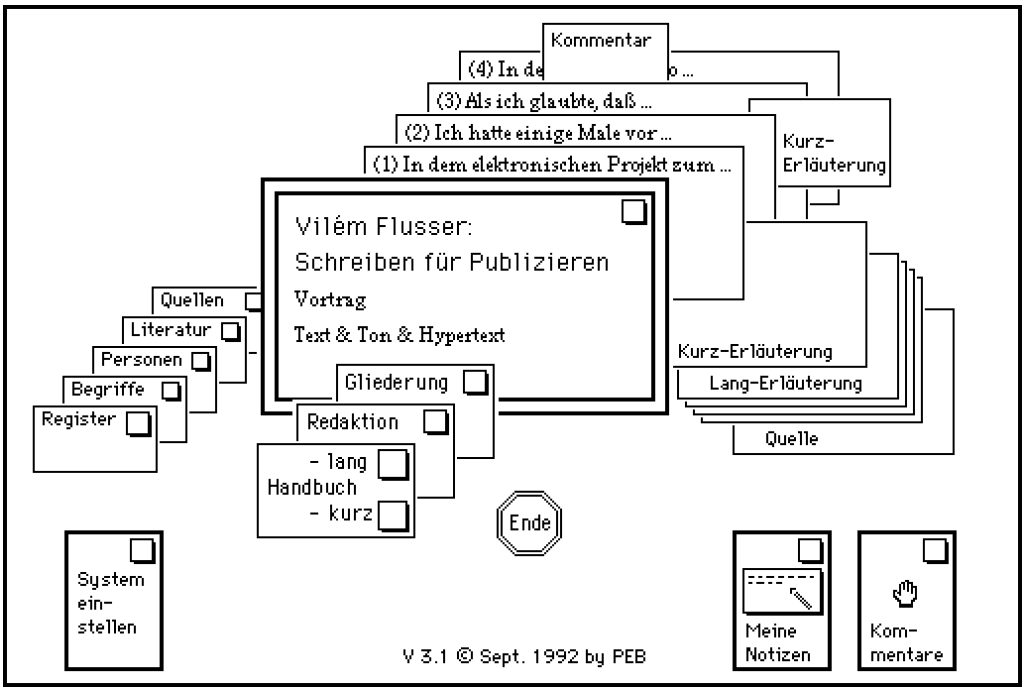

Fig. 5: Start window providing an overview of the different sections. Source: Vilém Flusser Archive.

tical' levels contain references to further information about names or philosophical concepts that Flusser mentioned, in passing, during his lecture (e.g. 'Abraham A. Moles', 'Maxwell's Demon') as well as additional bibliographical references (fig. 4). At any time, users can choose to add their own annotations or to jump to the start screen, a map-like overview signifying the various 'layers' of the hypertext (fig. 5). The hypertext's T-structure is unusual since the contemporary standard definition describes hypertext as "a network […] with poly-hierarchical structures that cannot be displayed in a linear fashion."[17] One might question if a hypertext really follows such "a principle of non-linearity"[18] or if its structure could rather be described as a multi-linear one which manifests itself while users find their own navigational paths. The developers of the Flusser-Hypertext, however, determined that the structure of a hypertext shall be derived from its content.[19] Thus, a T-structure seems to be the obvious choice to organize the *linear temporality* of a lecture, while a finite number of references explore aspects *in depth*.

Flusser participated in the case study as a consultant, supporting the researchers with further information and explanations of his references. He witnessed various development stages of the sys-

17 Rainer Kuhlen, Hypertext. *Ein nicht lineares Medium zwischen Buch und Wissensbank* (Berlin and Heidelberg 1991), p. 33; transl. D.I.

18 Ibid.

19 Böhle, Riehm and Wingert, *Vom allmählichen Verfertigen elektronischer Bücher*.

tem: Bernd Wingert demonstrated an early version on May 15, 1991 at Flusser's home in Robion[20] and also presented later versions on conferences where Flusser was present, first at "Literatur im Informationszeitalter" [literature in the information age] on December 12, 1990 in Düsseldorf[21] and, finally, on November 22 and 23, 1991 at the CulTech conference in Essen[22] – only four days before Flusser's untimely passing in a car accident. According to Bernd Wingert (in a conversation with the author of this paper and Philipp Tögel), Vilém Flusser was apparently honored to see his words being materialized by the same technological apparatuses he had, since many years, explored in his writings. However, the Flusser-Hypertext was never finalized (in the sense of a fully functional and sufficiently tested application). The version depicted in this paper shows the last state of the work, the result of the project's 'phase 3' which lasted from January 11, 1990 until November 22, 1991. Afterwards, the project was wrapped-up with an electronic documentation (1991–1993) and published as a research report in 1997.[23]

Fast forward ten years, in 2007, the Flusser-Hypertext, still running on the same Apple Macintosh Performa 630 computer on which it was developed, was given to the care of the Vilém Flusser Archive at the Berlin University of the Arts by Bernd Wingert.[24] Restored by Baruch Gottlieb and collaborators at the Vilém Flusser Archive, a copy of the hypertext running on a similar Macintosh Performa system was presented to the public during the transmediale festival 2011 in Berlin. The efforts to exhibit the hypertext, with its system requirements demanding hard- and software with specifications identical with or similar to the Macintosh Performa 630, where quite high, as old hardware had to be repaired and partly replaced.[25]

The hardware aspect turned out to be a significant instability factor, not only for the exhibition during transmediale but also for a permanent setup for research purpose. This is why, in 2012, the Flusser Archive, thanks to the initiative of Baruch Gottlieb, contacted the researchers of the 'bw-FLA'[26] project at the Institute for Computer Science, University of Freiburg. Lead by Klaus Rechert, Dirk von Suchodoletz and Dragan Espenschied, the project aimed at developing an "Emulation as a Service" strategy as well as a technological architecture that "simplifies access to preserved digital assets

20 Wingert, Der Flusser-Hypertext.

21 Bernd Wingert, Kann man Hypertexte lesen?

22 Bernd Wingert, Schreiben für Publizieren. Ein Hypertext-Experiment mit einem Flusser-Text. *Kunstforum* 117 (1992), p. 109.

23 Böhle, Riehm and Wingert, *Vom allmählichen Verfertigen elektronischer Bücher*.

24 Bernd Wingert, Flusser hören – lesen – studieren. Der "Flusser-Hypertext" – von der Nachgeschichte zur Vorgeschichte. *Flusser Studies* 24 (2017); https://www.flusserstudies.net/sites/www.flusserstudies.net/files/media/attachments/wingert-flusser-hypertext.pdf, access: February 15, 2021.

25 Transmediale, Flusser Hypertext Prototype 2 (2011); https://archive.transmediale.de/content/flusser-hypertext-prototype-2, access: February 15, 2021.

26 bwFLA – Emulation as a Service (project website); http://eaas.uni-freiburg.de, access: Febraury 15, 2021.

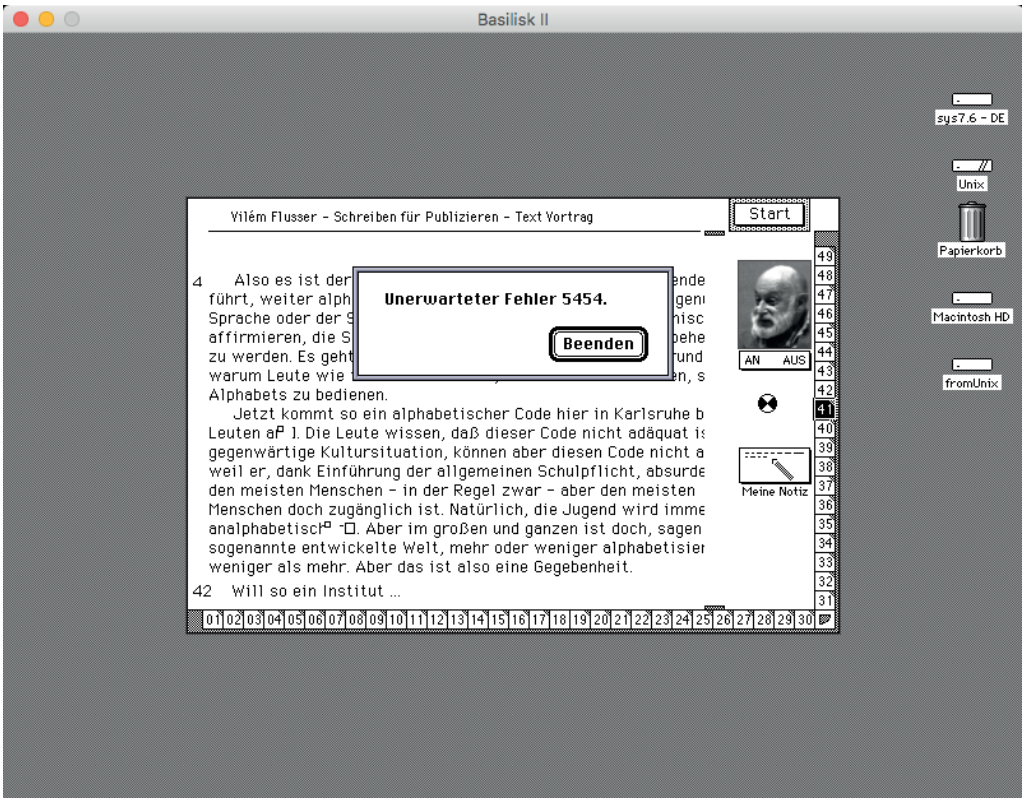

Fig. 6: Basilisk II emulation displaying an "unexpected error 5454" message, indicating corrupted HyperCard files. Screenshot: Philipp Tögel.

allowing end users to interact with the original environments running on different emulators."[27] After transferring the hypertext from the original Macintosh Performa, the researchers set up a first version of the Flusser-Hypertext emulation, which became one of the bw-FLA use cases. Although this version did not yet support the audio level of the hypertext, the emulation was now finally available on both the bw-FLA project website[28] and, embedding the emulation that ran on the bw-FLA servers, the Vilém Flusser Archive website.[29]

The next 'life cycle' of the Flusser Hypertext began with the preparation of the exhibition "Without Firm Ground – Vilem Flusser and the Arts" by Siegfried Zielinski, Baruch Gottlieb and the team of the Vilém Flusser Archive (lead by the author of this paper), which opened at the ZKM | Center for Art and Media, Karlsruhe in 2014 and which travelled in subsequent years to the Academy of Arts, Berlin, to WEST in The Hague and to The Gallery of the Academy of Performing Arts in Prague. Due to the media archaeological element in the curatorial

27 Ibid.

28 Now moved to the new domain http://eaas.uni-freiburg.de, access: Febraury 15, 2021.

29 http://flusser-archive.org, access: Febraury 15, 2021

concept, the hypertext emulation constituted a vital element of the exhibition, which made a solution of the defect audio function even more relevant. Philipp Tögel from the Berlin University of the Arts, in a thorough quasi-forensic investigation into the HyperCard stacks, finally solved the problem after identifying a corrupt HyperCard file holding audio data (fig. 6); he was also essential for setting up the emulation and its installation for the exhibition.[30] During the exhibition the Flusser-Hypertext emulation used a Basilisk II emulator on a modern mini PC running on Linux, while, applying some creative adapter wiring by Philipp Tögel, peripheral devices (screen, mouse, keyboard, speakers) from the time back when the hypertext was developed where used to provide an authentic interaction experience.

Only a few years after the bw-FLA research project had concluded in 2013,[31] the emulation ceased to run on the project website at the University of Freiburg, probably due to a lack of server-related updates. However, thanks to the continuous commitment of Baruch Gottlieb, the emulation is now up and running again via the website of the 'Flusser Club' initiative, as a result of the Flusser100 Winter School funded by the DAAD.[32] According to a Flusser Club newsletter (February 12, 2021), references and source material will be added within the next months to document the Flusser-Hypertext project history. A history of curiosity, research and tinkering that now spans over a period of more than 20 years and that demonstrates the importance, and difficulties, of preserving digital cultural artifacts.

Acknowledgements:
This work has been funded by the Federal Ministry of Education and Research of Germany (BMBF) under grant no. 16DII126 ("Deutsches Internet-Institut").

30 Frank Padberg, Philipp Tögel, Daniel Irrgang and Martin Häberle, A Case Study on Emulation-based Preservation in the Museum: Flusser Hypertext. *Proceedings of the 13th International Conference on Digital Preservation IPRES* (2016), pp. 149–158. See also Baruch Gottlieb and Philipp Tögel, Rehabilitating Vilém Flusser's "Schrift" and "Hypertext," presentation at iMAL, Brussels (2015); video documentation available online: https://www.youtube.com/watch?v=-wZgycDop9E, access: February 15, 2021.

31 Klaus Rechert et al., Take care of your belongings today – securing accessibility to complex electronic business processes. Electronic Markets 24/2 (2014), pp. 125–134.

32 Flusser Club, Flusser Hypertext, http://flusser.club/en/hypertext/, access: February 15, 2021.

References

Böhle, Knud, Ulrich Riehm and Bernd Wingert, *Vom allmählichen Verfertigen elektronischer Bücher. Ein Erfahrungsbericht* (Frankfurt/M. and New York: Campus, 1997).

bwFLA — Emulation as a Service (project website); http://eaas.uni-freiburg.de, access: Febraury 15, 2021.

Flusser Club, Flusser Hypertext, http://flusser.club/en/hypertext/, access: February 15, 2021.

Flusser, Vilém, Hypertext. Über das Schicksal von Büchern. *NZZ Folio* 10 (October 1991), pp. 35–36.

Flusser, V., *Ins Universum der technischen Bilder* (Göttingen: European Photography, 1985).

Flusser, V., Line and Surface. *Main Currents in Modern Thought* 29/3 (1973), pp. 100–106.

Flusser, V., *Schreiben für Publizieren. Kernforschungszentrum Karlsruhe 2/3/89* (1989). Lecture manuscript, Vilém Flusser Archive, doc. no.: 2639.

Gottlieb, Baruch, Hypertext, in: *Flusseriana. An Intellectual Toolbox*, ed. Siegfried Zielinski, Peter Weibel and Daniel Irrgang (Minneapolis: Univocal Publishing, 2015), pp. 212–214.

Hadler, Florian and Daniel Irrgang, Instant Sensemaking, Immersion and Invisibility. Notes on the Genealogy of Interface Paradigms. *Punctum* 1 (2015), pp. 7–25.

Irrgang, Daniel and Marcel R. Marburger, Vilém Flusser – A Biography, in: *Flusseriana. An Intellectual Toolbox*, ed. Siegfried Zielinski, Peter Weibel and Daniel Irrgang (Minneapolis: Univocal Publishing, 2015), pp. 452–519; see p. 510 for the hypertext project.

Kaiser, Gert, Dirk Matejovski and Jutta Fedrowitz, *Kultur und Technik im 21. Jahrhundert* (Frankfurt/M. and New York: Campus, 1993).

Kay, Alan, User Interface. A Personal View, in: *multiMEDIA. From Wagner to virtual reality*, ed. Randall Packer and Ken Jordan (New York: W.W. Norton, 2001), pp.121–131.

Kuhlen, Rainer, *Hypertext. Ein nicht lineares Medium zwischen Buch und Wissensbank* (Berlin and Heidelberg: Springer, 1991).

Nielsen, Jakob, *Multimedia, Hypertext und Internet. Grundlagen und Praxis des elektronischen Publizierens* (Braunschweig and Wiesbaden: Vieweg, 1996).

Padberg, Frank, Philipp Tögel, Daniel Irrgang and Martin Häberle, A Case Study on Emulation-based Preservation in the Museum: Flusser Hypertext. *Proceedings of the 13th International Conference on Digital Preservation IPRES* (2016), pp. 149–158.

Rechert, Klaus, Dirk von Suchodoletz, Isgandar Valizada, Johann Latocha, Tatiana Jimenez Cardenas, Alibek Kulzhabayev, Take care of your belongings today – securing accessibility to complex electronic business processes. *Electronic Markets* 24/2 (2014), pp. 125–134.

Transmediale, Flusser Hypertext Prototype 2 (2011); https://archive.transmediale.de/content/flusser-hypertext-prototype-2, access: February 15, 2021.

Wiechens, Peter, Hypertext und Künstlerbuch. Das Buch nach dem Ende des Bu-

ches, in: *Einführung in die Kulturwissenschaft*, ed. Thomas Düllo (Münster: LIT, 1998), pp. 328–346.

Wingert, Bernd, Der Flusser-Hypertext. Einige Erfahrungen aus Entwickler- und Nutzersicht, in: *Bodenlos – Vilém Flusser und die Künste*, ed. Siegfried Zielinski and Daniel Irrgang (Berlin: Akademie der Künste, 2015), pp. 78–79.

Wingert, B., Flusser hören – lesen – studieren. Der "Flusser-Hypertext" – von der Nachgeschichte zur Vorgeschichte. *Flusser Studies 24* (2017); https://www.flusserstudies.net/sites/www.flusserstudies.net/files/media/attachments/wingert-flusser-hypertext.pdf, access: February 15, 2021.

Wingert, B., Schreiben für Publizieren. Ein Hypertext-Experiment mit einem Flusser-Text. *Kunstforum* 117 (1992), p. 109.

Wingert, B., Kann man Hypertexte lesen?, in: *Literatur im Informationszeitalter*, ed. Dirk Matejovski and Friedrich Kittler (Frankfurt/M. and New York: Campus, 1996), pp. 184–218.