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INDICE

Saggi

Of Pencils and Pixels

The Early Years of Computer-based Graphic Design Teaching at the Basel School of Design 1984–1990

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This article investigates the transformations triggered by the advent of the Macintosh computer in graphic design education, focusing on the specific case of the Basel School of Design in Switzerland.

In the period between the introduction of the first Macintosh to the school workshop in 1984 till the early 1990s, the author examines its impact on the school's educational principles, which were by tradition based on artistic, intuitive design processes and drawing skills.

Based on the first student projects created with the computer, it will be shown that the advent of the computer triggered a transformation process that led to the creation of specialized computer-based design pedagogy in the late 1980s. While the computer required new skills to be integrated into graphic design courses and had a clear impact on educational discourse, it is also shown which essentials of traditional educational principles were transferred to the digital realm.

> Arguably no [design] field has experienced as much transformative change catalyzed by digital technology as that of graphic design. While many design professions are still working within the framework of older conventions, the profession of graphic design has been completely rewritten, from a handmade artistic specialty to one that highlights technological skill. (Eskilson, 2023)

This quote from design historian Stephen J. Eskilson's book on the history of digital design, published in 2023, highlights the impact that the advent of the computer, had on graphic design in particular. While graphic design historians generally agree that the mid-1980s and their technological innovations constituted a pivotal period for graphic design history, the in-depth analysis of this "rewriting" of a whole design discipline going beyond comprehensive approaches is a research desideratum that has only been addressed in recent years[1]. In view of this, it should come as no surprise that the computer's impact on graphic design teaching from the mid-1980s on is an understudied topic. Little is known about when and how computers entered the educational context at the graphic design schools, how they affected and changed graphic educational discourse and, more specifically, in which ways they transformed the educational principles in this design field.

This paper investigates the computer's impact on graphic design education in Switzerland from the mid-1980s to the early 1990s by focusing on a specific case, that of the Basel School of Design. Methodologically, the paper is based on the analysis of both visual and textual archival sources (such as student work, curricula, course descriptions), on articles on design education in trade journals and other publications, as well as, on interviews with time witnesses led by the author. The Basel School of Design presents a promising case for two reasons: During the 1950s to 1970s it built up an international reputation for graphic design and typography education and is considered one of the most influential graphic design schools of the 20th century[2].

Fig. 1 Michael Renner, graphic translation of a teacup, student work from the graphic design program at Basel School of Design, circa 1982–1986, Basel Design History Lab. Copyright: M. Renner.

Its educational tradition however – as will be shown in more detail in the next paragraph – was strongly based on hand craft, drawing courses and intuitive, artistic form finding. It is therefore promising to investigate the effects that the fast-paced computer had on such an educational model. When and how was the computer introduced to graphic design teaching? Which attitude did teachers take towards it? And in which ways did it transform the school's educational principles?

1. Graphic Design Teaching of the Pre-Computer Era

In the mid-1980s, the Basel School of Design could already look back on several decades of graphic design teaching. The four-year graphic design program *Fachklasse für Graphik,* founded in 1915, had become well known internationally in the 1950s and 1960s, mainly thanks to the dissemination strategy of graphic design teacher Armin Hofmann and typography teacher Emil Ruder. Both made their teaching methods public through exhibitions and guest teaching and wrote teaching manuals that are today considered as "Swiss Bibles" (McKoy, 2022, p. 42) of graphic design[3] – publications representing the Swiss Style of the mid-20th century which emphasized formal reduction, abstraction and clarity of the message.

However, recent research on the history of the Basel School of Design has shown that its educational model of the mid-20th century was more diverse in terms of style, and large parts of the graphic design program as well as the one-year pre-course were based on drawing and illustration skills (Bischler, 2021, p. 53). A great variety of motifs (e.g. landscapes, plants, objects, nudes, figures, animals) and drawing techniques (e.g. sketching, figurative, geometrical drawing) were trained intensively (Maier, 1977, p. 8; Ruder, 1967, p. 75). While other Swiss and European design schools reduced or even eliminated drawing courses in the 1950s, they remained at circa forty percent at the Basel School of Design's graphic design program[4].

A specific drawing skill, the graphic translation, became typical of the teaching model of the Basel School of Design in the pre-computer era. It is a black and white representation of an object in which the graphic details are reduced to a minimum (Fig. 1). While graphic translations might appear simple in the final outcome, according to drawing teacher Kurt Hauert (1989), they were

> the end product of work processes which covered weeks and months each; starting with observations, investigations, sketches, up to the realization of a sign which had to come as close as possible to the given object in a simplified, concentrated manner, as far as expression and genuineness is concerned.

The intense, naturalistic drawing training from other courses constituted a basic skill for formally qualitative translations. As Basel School of Design alumnus Jim Faris (1989) put it, "drawing was viewed as the foundation for all visual thinking" (p. 49) there.

Next to drawing, lettering was another important focus. As Armin Hofmann (1956) wrote: "Only if [the student] himself takes the trouble and attempts the time-consuming experiment of developing an alphabet on his own, will he really get acquainted with the fundamental laws of lettering" (p. 2). In this tradition, it was still common in the 1980s for each student of the graphic design program to learn how to draw individual letterforms with pencil, paint and brush (Fig. 2).

Fig. 2 Michael Renner, hand-drawn lettering, student work from the graphic design program at Basel School of Design, circa 1982–1986, Basel Design History Lab. Copyright: M. Renner.

This adherence to the school's long tradition of lettering was meant to train the students' sense of form with regards to letters and to teach them how to use type creatively, by "redesigning it, using it inventively and expressively" (Gürtler, 1990, p. 6).

The rising popularity of the Basel School of Design's graphic design program since the 1950s led to the foundation of a second program in 1968: the Advanced Class for Graphic Design (Ruder, 1969, p. 540), which was mainly attended by international students. Its curriculum was more open, allowing students to develop their own projects. Nevertheless, drawing, graphic translation and intuitive form-finding were educational foundations of this program as well (Hofmann, 1969, pp. 552-557). As Hamish Muir, alumnus of the Advanced Class for Graphic Design, described in an interview for *Emigre* magazine in 1990: "At the Basel School of Design they try to bring out in people a kind of intuitive approach to making things visual" (Muir, 1990, p. 22).

When contextualizing the Basel School of Design's model by comparing it to other graphic design programs of the time, it becomes apparent that its holding on to traditions such as figurative drawing, intuitive design processes and individual letterform design indicates a certain opposition towards influential tendencies in European design theory and pedagogy of the mid-20th century. The Basel School of Design's "formal" approach contrasted with a strand in German-speaking design education, which was more conceptional, constructivist and science-based. One of its centers was the Ulm School of Design in Germany with its Visual Communication department. Teachers there tried to integrate scientific methods from semiotics, cybernetics or geometry into graphic design education and diminish intuitive and illustrative approaches. An example is the philosopher and Ulm School of Design teacher Max Bense, who sought to make aesthetic conditions calculable and developed theories which paved the way for early computer art in the 1960s (Walther, 2003, p. 91). The Ulm School of Design's ideas of rationalization and scientific methods in design pedagogy were linked to popular strands in design theory, such as the British Design Methods Movement, all representations of a "general mathematical optimism" (Witt, 2021, p. 11) in mid-twentieth design culture which was also received in the Swiss graphic design discourse.

In Zurich, the concept of *Konstruktive Grafik* was developed by designers such as Hans Neuburg and introduced to the Zurich School of

Design's graphic design program by Josef Müller-Brockmann (see Neuburg, 1958). Its representatives called for individual drawing to be replaced by photography or geometric construction, and individual lettering to be replaced by using prefabricated typefaces (Müller-Brockmann, 1961, pp. 16, 44). At the Basel School of Design however, principles of construction, mathematics or other science-based methods, which might have paved the way for computer-based design, were not included in the curriculum.

2. The Macintosh. A Tool Like Any Other?

The begin of the digital turn in graphic design was marked in 1984, when Apple Inc. released the Macintosh, one of the first mass-market personal computers with a graphical user interface (GUI)[5]. According to Loretta Staples (2000), the Macintosh constituted a paradigm shift for graphic design and typography, since it

> popularized the key technologies and concepts that would herald a new typographic age. While many of these technologies and ideas originated elsewhere, their dissemination via the Macintosh introduced a broad public to WYSIWYG (an acronym for 'what you see is what you get') and its associated technologies: bitmapped fonts and dot-matrix printing, which was quickly surpassed by laser printing.

Fig. 3 Mara Jerman, student at the Basel School of Design, sitting at a Macintosh workstation, 1985. Copyright: Photographer unknown / Mara Jerman. Published in Weingart, 1986, p. 16.

For graphic designers, the GUI was a revelation, since designing with the computer no longer required deep knowledge on coding, respectively previous text-based user interfaces. Pioneers of digital graphic design such as Los Angeles-based April Greiman started to use the Macintosh right after its release and created the first-ever computer-designed magazines, posters etc. (Imbert, 2023, p. 3-7). However, according to Rick Poynor (2013), looking at the complete picture of graphic design practice, the Macintosh was both, enthusiastically welcomed by some, categorically rejected by others (p. 96-97, 148-149). Considering the previously described educational model of the Basel School of Design, we could assume that the school became part of the latter, the camp of computer sceptics.

However, according to former Basel School of Design students, the first Macintosh 128k entered the school building in the year of its release, as early as fall 1984 (L. Pomeroy, personal communication, March 5, 2025). Installed in a separate room of the typography workshop, it came with a keyboard, a mouse, an external floppy disk drive and a dot matrix printer. Only advanced students who had already developed an individual project were allowed to use it at first, having to share the available time slots. There was no technical introductory course at first, the students had to familiarize themselves with the machine by consulting the instruction manual (L. Pomeroy, personal communication, March 5, 2025). In an article in the *Swiss Typographic Monthly Magazine* from 1985, the Basel School of Design published a photo of this first Macintosh station in use (Fig. 3). The shortage of having only one Macintosh for all students created an almost mythical status around what was, according to alumna Lisa Pomeroy (2025), first considered a "drawing machine" by the students, and made it a privilege to experiment with it.

Not only did the Macintosh enter the Basel School of Design's typography workshop at an early stage, but it also entered the written discourse on graphic design teaching. In 1985, Wolfgang Weingart, who had taught at the Basel School of Design since 1968, published a retrospective article on his courses in the US-American journal *Design Quarterly*. Based on the student work shown, he described the development of techniques and media used, from lead typesetting to photo film and finally to "images we create on an Apple computer" (Weingart, 1985, p. 9). Even though the Macintosh had only arrived at this time, it was already placed in a historical narrative, at the preliminary end of a long line of progress. According to Wolfgang Weingart (1985), the Macintosh was still "a medium new to Swiss design schools" (p. 9) in early 1985, thus, he also claimed a pioneering role for his school[6].

Wolfgang Weingart became a dominant actor in the early discourse on computer-aided design at the Basel School of Design through his many publications in trade journals, regularly praising the "infinite graphic possibilities of computers" and their relevance for a "new world of typography" (Weingart, 1985, p. 9). A former student recalls that even before the first device arrived in 1984, Wolfgang Weingart had the foresight to describe the release of the Macintosh as a revolution for graphic design (Renner, 2025a). In 1986, Wolfgang Weingart wrote:

> We cannot ignore the many and diverse opportunities for expression which are offered by the Macintosh.
>
> The flexibility of the Apple computer makes it possible to explore almost any design idea through a series of simple commands. (Weingart, 1986)

On the last page of his 1985 essay in *Design Quarterly,* he even wrote a solemn inscription: "We dedicate this final page to our Apple Macintosh Computer from Cupertino/CA"(Weingart, 1985, p. 20). However, Wolfgang Weingart's attitude towards computer-aided graphic design and typography was more complex than his (often intentionally provocative) statements might indicate at first glance. In his practice since the 1960s, he had always been open to experimenting with different techniques, rejected to obey to traditional rules, and had celebrated a creative misappropriation of typographic tools. However, Wolfgang Weingart used the Macintosh rather cautiously in his own practice and combined it with other techniques. According to Vanessa Gendre, Barbara Junod, and Sarah Owens (2016), Wolfgang Weingart's hesitant use ofthe computer even suggests "a degree of conservatism" (p. 36). At least, he had an ambivalent attitude, neither enthusiastically welcoming nor categorically rejecting the computer. He oscillated between encouragement (of his students) and caution (in his own practice)[7].

This ambivalence can also be found in the early computer-based student work from the Basel School of Design. In 1985, Mara Jerman, a student at the Advanced Class for Graphic Design, designed wrapping papers for Spanish oranges in Wolfgang Weingart's course. She originally started her design process without the computer, by creating collages with Letraset screens, colored paper, drawings, and photocopied patterns and type (Jerman, 1986, p. 2). Her design's dominant element was a wide frame arranged around the brand name *Citricos Pasenal.*

After starting with analog techniques, she had the idea to use the Macintosh to create more frame variants:

> The MacPaint system of the Macintosh computer enabled me to ‘draw’ and ‘paint’ with various grids and textures, juxtaposing them on one surface to give the effect of collage without cutting and pasting. Because of the complex and interesting effects achieved with the computer in a relatively short period of time, the frames became a project in themselves. (Jerman, 1986)

The pixel-based MacPaint software offered a user interface that was predestined for creating patterns and textures, at that time, exclusively in black and white. In addition to the functions still common in drawing software today, such as brush, pencil, area fill, eraser and the copy/paste and undo functions, MacPaint offered a wide range of ready-made patterns to draw and fill objects with. The patterns were based on an 8 by 8 pixel grid which could be edited with a few mouse clicks.

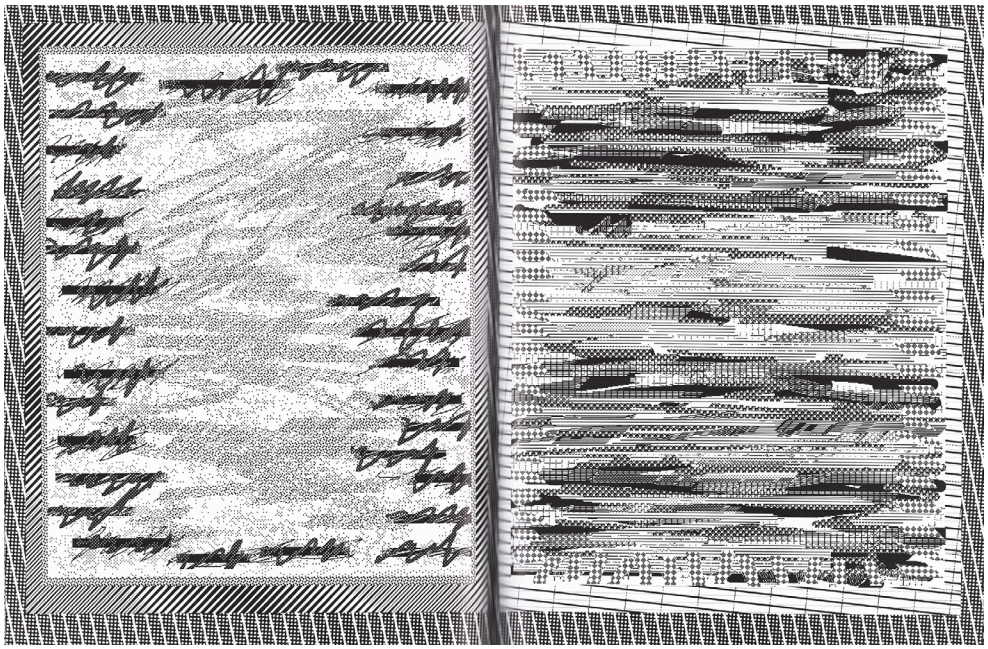

Fig. 4 Mara Jerman, spread from *Typographic Monthly Magazine* showing her student work; abstract frames designed with the computer and with Letraset backgrounds, Basel School of Design, typography course of Wolfgang Weingart, 1985, Copyright: M. Jerman. Published in Jerman, 1986, 1pp. 4–15.

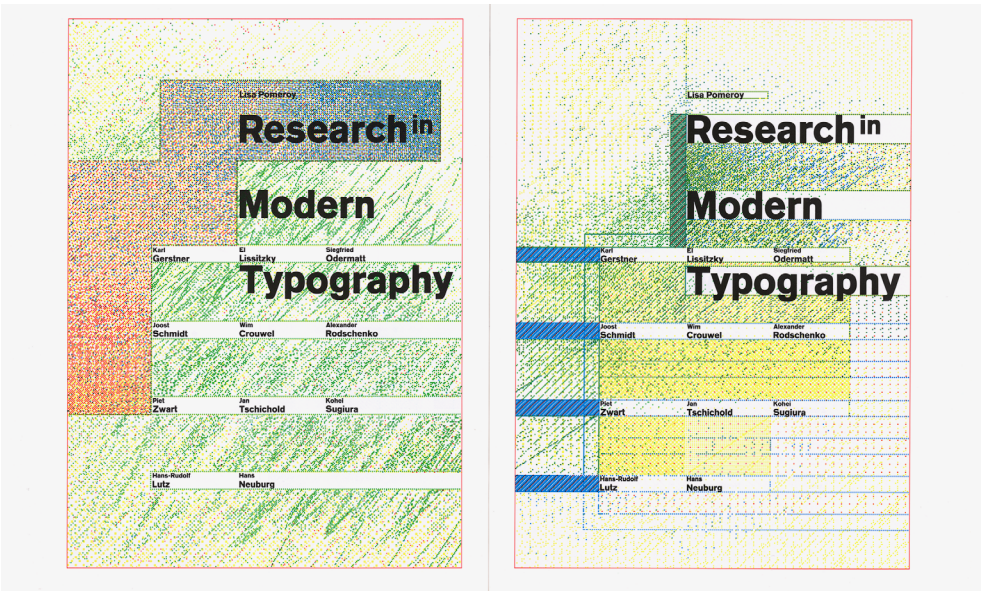

Fig. 5 Lisa Pomeroy, two book cover designs, lead type in combination with MacPaint-drawing / colored dot-matrix print, student work at Basel School of Design, Typography course of Wolfgang Weingart, circa 1987, Copyright: L. Pomeroy.

The user was able to simultaneously observe the effect that moving only few pixels had on the overall pattern. Many graphic designers who used MacPaint in the mid- to late-1980s, didn't use it to draw in a traditional, figurative sense, but to experiment with ornamental textures and patterns (Renner, 2014, p. 669). This also applies to Mara Jerman's student work, who was so fascinated by the software's possibilities that she continued to use MacPaint to design a series of twelve abstract frames (Fig. 4). However, even though fascinated by the Macintosh, Mara Jerman (1986) also described a certain danger of losing control:

> When working on the computer in this way, I feel it is important that the designer work with the intention of manipulating the computer as a medium, rather than the various techniques available controlling the direction a design takes.

She combined the dot-matrix printouts with distorted and manipulated Letraset backgrounds, leading the project back from digital to analogue. This method of going back and forth between tools is a typical approach to computer-based design as it was practiced at the Basel School of Design in the first years after the advent of the Macintosh.

Another example is a student project by Lisa Pomeroy from around 1987. She designed numerous variants of a book cover entitled *Research in Modern Typography*, which was based on a fixed type arrangement that she had set in lead type. This arrangement was combined with other elements such as lines or planes to investigate "how these additional elements would visually transform the composition and how the elements themselves could be manipulated through a variety of media" (Pomeroy, 1988, p. 2). In her design process, Lisa Pomeroy, like Mara Jerman, used the computer as one tool among many. She initially used Letraset sheets, drawing and collage for the backgrounds and only began experimenting with bit-mapped elements created with MacPaint in the end. The result was a great variety of colorful pixel grids. Lisa Pomeroy had to print every color separately with a dot matrix printer and then combined the pixel grids with the lead type arrangement (Fig. 5).

Lisa Pomeroy's and Mara Jerman's works are examples of how Basel School of Design students developed a creative and experimental approach towards computer-based graphic design in this early phase of digitalization when the software available at the school didn't allow to design complex layouts on the screen yet[8]. The first years of doing graphic design with the computer at the Basel School of Design meant "drawing" with it, working against strong technical constraints, e.g. long loading times due to low storage capacity, tiny screens, low resolution and rudimentary printing options (Pomeroy, 2025). The students embraced the new, pixel-based aesthetic that came with these constraints, instead of opting to mimic analog outcomes. However, the discipline-changing significance of the computer and the fact that it would soon replace most manual techniques was not yet realized by anyone at the school at the time, as Lisa Pomeroy recalls (Pomeroy, 2025). This is also confirmed in Wolfgang Weingart's statements, who wrote in 1986: "the computer can be an ideal complement to existing technical and design aspects of teaching". (Weingart, 1986, p. 1)

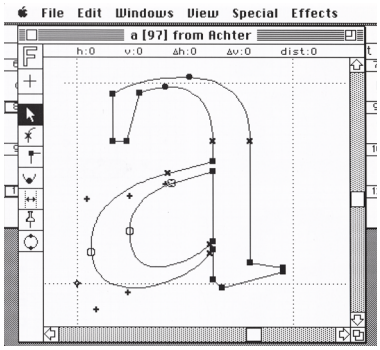

Fig. 6 Bruno Maag, screenshot of the digital type design process with Fontographer software, diploma project at Basel School of Design, Mentor: André Gürtler, 1988, Copyright: B. Maag. Published in Maag, 1989, p. 3.

3. Continuing Good Design on the Screen

The idea of the Macintosh as a complement to traditional typographic means was quickly surpassed by the technical development of the late 1980s. With the spread of desktop publishing (DTP) software such as Aldus' PageMaker (released in 1985), designing layouts for magazines, books and posters on the computer became more and more common.

DTP's increasing spread in the mid-1980s triggered an interest in digital type design at the Basel School of Design and resulted in the first diploma project on computer-based type design, developed by Bruno Maag in 1988. According to Maag (1989), DTP had "brought typesetting and the use of printing types within the reach of the general public" (p. 1). Bruno Maag found that out of this development, "many questions concerning type quality" (p. 1) had arisen. In his project, using the example of *Times New Roman*, Bruno Maag analyzed the reasons for the typeface's quality loss when digitized and printed with common printers and developed criteria for designing a new serif typeface that was optimized for DTP and designed exclusively on screen (Fig. 6).

Bruno Maag's overall goal was to contribute to a better legibility of digital typefaces (Maag, 1989, p. 24). By choosing this as the cornerstone of his project, his work stands in a long line of tradition at the Basel School of Design. Emil Ruder had advocated for the maxim of "effortless readability" (Ruder, 1960). His theories were the base of *Swiss Typography* and coined the Basel School of Design's teaching of the 1950s and 1960s. Bruno Maag's mentor André Gürtler, an expert for typography, lettering and typeface design, had studied with Emil Ruder in the 1950s before becoming a teacher in 1965. Thus, Bruno Maag's diploma project connected the Basel School of Design's typography and hand lettering tradition with the present technological state and transferred the mid-century modern idea of "good design" (Maag, 1989, p. 24) to the digital age[9].

André Gürtler strongly supported Bruno Maag's endeavors to improve quality in digital type design at an early stage. According to André Gürtler (1989), the diploma project had proven that "the designing of typefaces and the planning of complete typeface families on the personal computer screen is both feasible and appropriate for professional application" (p. 1).

Thus, André Gürtler is another important actor regarding the early promotion of computer-based methods at the Basel School of Design. His teaching concept, emphasizing skills such as letterform design and calligraphy and his open attitude towards new technologies paved the way for students to enter the emerging field of digital typefaces for personal computers.

However, Wolfgang Weingart's and André Gürtler's early integration of digital technologies in their teaching from the mid-1980s should not obscure the fact that the arrival of the Macintosh at the Basel School

of Design did not result in an immediate educational turnaround. In 1990, for example, eighty percent of the curriculum at the visual communication department was still relying on analog techniques (Höhere Schule für Gestaltung Basel, 1990, p. 6–61). Especially the older generation of graphic design teachers who had learned their profession in the era of lithography and lead type were not expected to switch to the rapidly changing digital technology, and thus did not integrate it into their teaching (P. von Arx, personal communication, January 14, 2025).

Many Swiss graphic designers of this generation were concerned about DTP's rapid development and more and more laymen designing printed matter, which also raised polemical questions towards design schools: If anyone could design print products simply by learning the respective software, was graphic design education even needed? Hans Rudolf Bosshard, a Swiss typographer and teacher at the Zurich School of Design, wrote in 1993 that unfortunately, untrained designers would produce DTP outcomes "beyond any aesthetic and qualitative references", resulting in a "crisis of typography" (Bosshard, 1993, p. 81–82). At the Basel School of Design, we can find a similar argumentation, that of denying the formal quality of the newly emerging amateur design. E.g., Wolfgang Weingart (1988) wrote, "only a sound knowledge of the most elementary and classical design principles" (p. 1) would allow approaching design tasks with the computer. One should not forget that "new technology will not design for us" (p. 1). In the same fashion, Bruno Maag (1989) added in the description of his diploma project: "The machine is not capable of judging visual criteria. Visual quality cannot be achieved without a well-trained designer" (p. 24).

If we sum up this line of argumentation taken by representatives of the Swiss design schools, graphic design education had by no means become obsolete, on the contrary. The decline in overall graphic design quality triggered by the computer had made a profound formal training even more necessary – a training that had been provided by the Swiss design schools and their teaching staff for decades. However, by coincidence, at the Basel School of Design, the advent of the Macintosh had a temporal correlation with a generation change in staff: e.g., influential graphic design teachers such as Armin Hofmann, Max Schmid and Kurt Hauert left the school in the mid-1980s for reasons of age. Their retirement left a gap to be filled with new teachers and new educational concepts exactly at the time when digitalization in graphic design gained momentum.

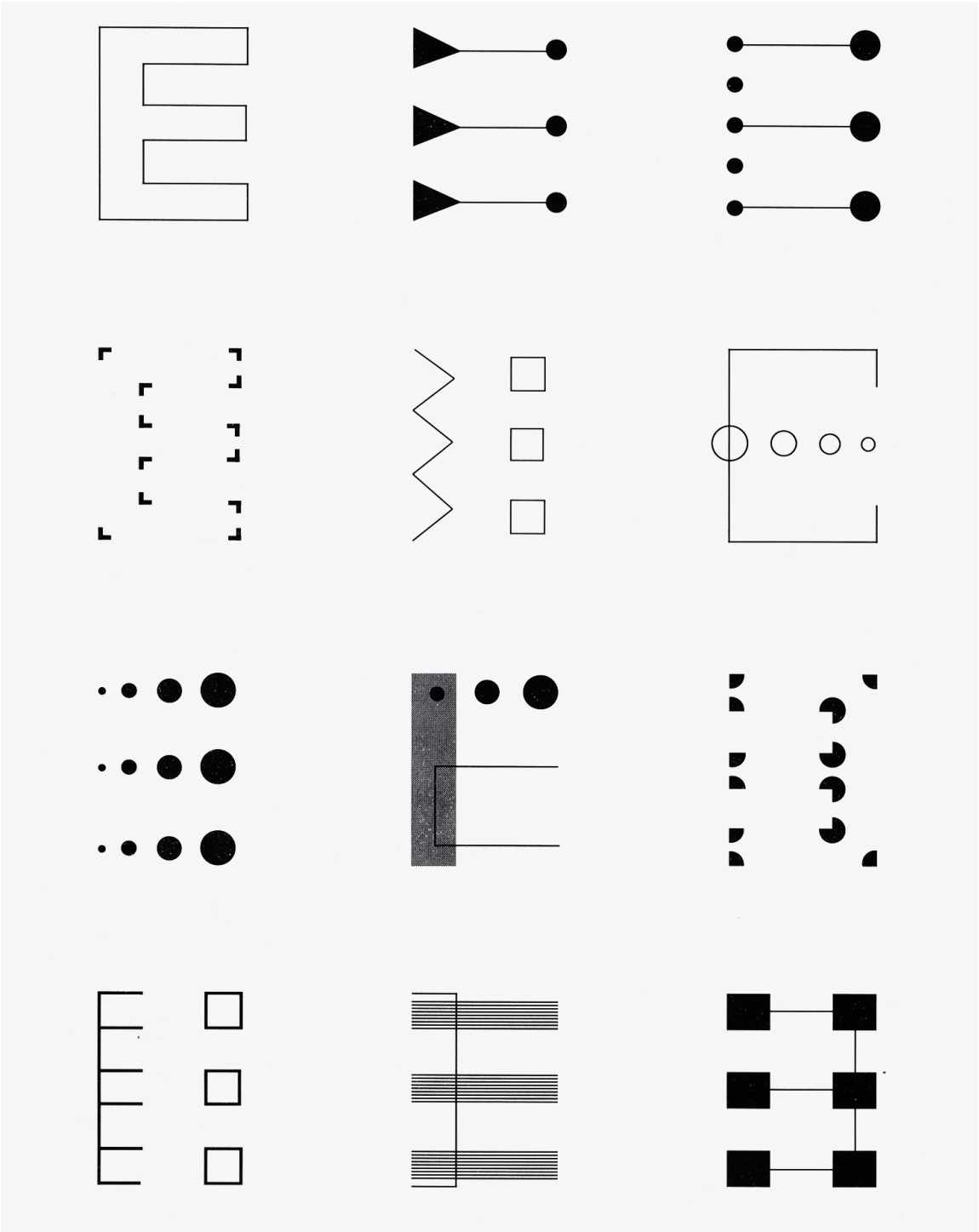

Fig. 7 Variations of the letter “E”, designed with the Macintosh, student work at Basel School of Design (student’s name unknown), from the course Computer Basics taught by Lisa Pomeroy, circa 1987–1989, Copyright: Basel School of Design.

4. Evolution and Extension: Specialized Computer Courses

In 1990, the Basel School of Design published a special issue on its Visual Communication department in *Typographic Monthly Magazine.* According to the introduction, the department's aim was to familiarize students "with new, immaterial text and image processing systems in particular" (Höhere Schule für Gestaltung, 1990, p. 2) – thus, to integrate digital technologies into teaching. Apparently, the school had realized that it wasn't sufficient to only integrate the computer as a tool amongst many into existing courses, as is mirrored by changes in the curriculum: In the late 1980s, two new teachers were hired explicitly with the task of teaching computer-based design. Lisa Pomeroy who started to teach Computer Basics in 1987 and Michael Renner for the course of Computer Projects in 1989 (Höhere Schule für Gestaltung Basel, 1990, pp. 24, 64). Both alumni of the Basel School of Design had been among the first students to experiment with the Macintosh in the mid-1980s. Additionally, to improve the school's technical equipment, its direction had applied for a special loan from the Canton of Basel-City which allowed to purchase ten more Macintosh workstations.

Now the new teachers were able to give computer-based design courses to a group of students. According to a Basel School of Design publication from 1990, Lisa Pomeroy's course was designed to provide the students with basic knowledge in the application and use of personal computers and graphic design software (Höhere Schule für Gestaltung, 1990, p. 56).

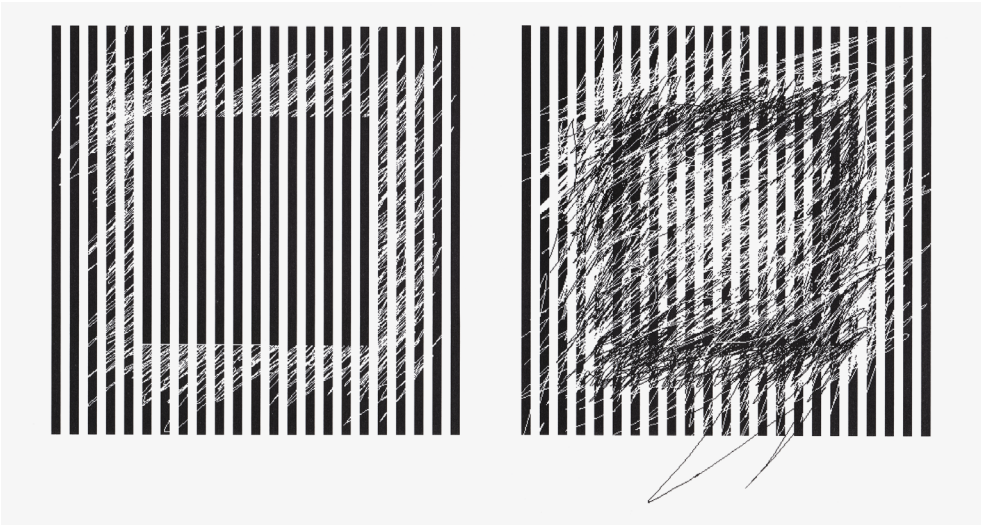

Fig. 8 Structure exercise, visualizing a square within a grid of vertical lines, designed with the Macintosh, student work at Basel School of Design (student's name unknown), from the course Computer Basics taught by Lisa Pomeroy, circa 1987–1989, Copyright: Basel School of Design.

Most students didn't have any experience with computers and GUIs[10], thus the course started from scratch, e.g., learning how to save and organize files, how to retrieve data etc. Students were given clear and structured exercises to learn the application of graphic design software. Lisa Pomeroy's course combined teaching "visual design basics" (Höhere Schule für Gestaltung, 1990, p. 56) with technical computer skills. For example, the students would pick a letter from the alphabet and use it as a basic structure. Students used computer-drawn geometric elements such as lines, squares, dots and triangles to design a large number of variants of a letter (Fig. 7).

The computer, according to a course description of *Computer Basics,* was considered an ideal tool to work with structures based on geometric grids (Höhere Schule für Gestaltung, 1990, p. 56). Thus, another exercise in Lisa Pomeroy's course was to create basic grids with the computer, e.g. vertical black lines on a white background, and then start adding interferences to gradually modify the image. One of Lisa Pomeroy's students investigated the use of various graphic interventions to visualize a square shape within the grid (Fig. 8).

If we compare these exercises to educational methods at the Basel School of Design from the 1970s, it becomes clear that they were an evolution and extension of traditional basic exercises that had coined the school's graphic design teaching for decades[11]. E.g., in Armin Hofmann's graphic design courses of the 1950s and 1960s, students were introduced to fundamental design principles such as composition or contrasts through basic exercises with dots, lines and planes in black and white – a teaching method Armin Hofmann published extensively in 1965 (Hofmann, 1965) and developed further towards grid studies in the 1970s and 1980s. As Hofmann (1985) described: "After designing a basic grid, the student removes, cuts or adds to parts of the grid, progressively changing the composition according to a freely invented system" (p. 4).

When Lisa Pomeroy started to teach, she thought about how she could integrate this tradition into her course and asked her former teacher Armin Hofmann's permission to build exercises on his method (Pomeroy, 2025). However, the difference was that one of the teaching goals of the traditional exercises, that of learning to work precisely, e.g. with paint and brush in meticulous hand work, was now replaced by a new goal, that of learning how to draw with software. Lisa Pomeroy's aim was to "connect design basics with the technical possibilities of the computer" (Höhere Schule

für Gestaltung Basel, 1990, p. 56) and thus, transfer the Basel School of Design's traditional basic exercises to the digital realm.

In the late 1980s, the rapid development of digital technologies raised substantial questions at the Basel School of Design, which were summed up in the brochure: "Will the computer shape the language of visual communication in the future? And what consequences might this have for design education?" (Höhere Schule für Gestaltung Basel, 1990, p. 16). Michael Renner was explicitly hired to answer those questions when he became a teacher in 1989. After graduating from the Basel School of Design, and before returning to the school as a teacher, he had worked in California for Apple Inc. and The Understanding Business, where he gained first-hand knowledge on computer-based graphic design, e.g. for pictograms and layouts. Michael Renner (1990) was convinced that the school needed "to participate in the formulation of a new visual vocabulary through research in the field of computer graphics" (p. 16). Michael Renner's teaching concept in his course *Computer Projects* consisted of three phases.

The first was called visualization: the students were brought to a certain technical level that gave them an overview of what the computer could do (Renner, 1994, p. 368). In the second phase, called discovery, the computer was examined for its creative possibilities. Black and white studies were also carried out in Michael Renner's courses to investigate how to create patterns, how to use the transformations and filters offered by the software.

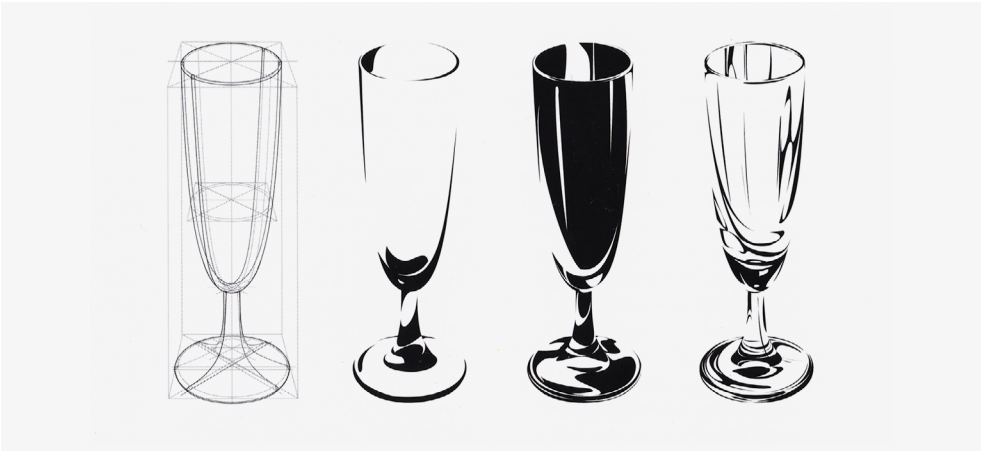

Fig. 9 Ole Christian Bergan, analytical object drawing (1st on the left) and graphic translation of a champagne glass, created with the computer, student work at Basel School of Design, from the course Computer Projects taught by Michael Renner, 1989, Copyright: Basel School of Design / O. C. Bergan.

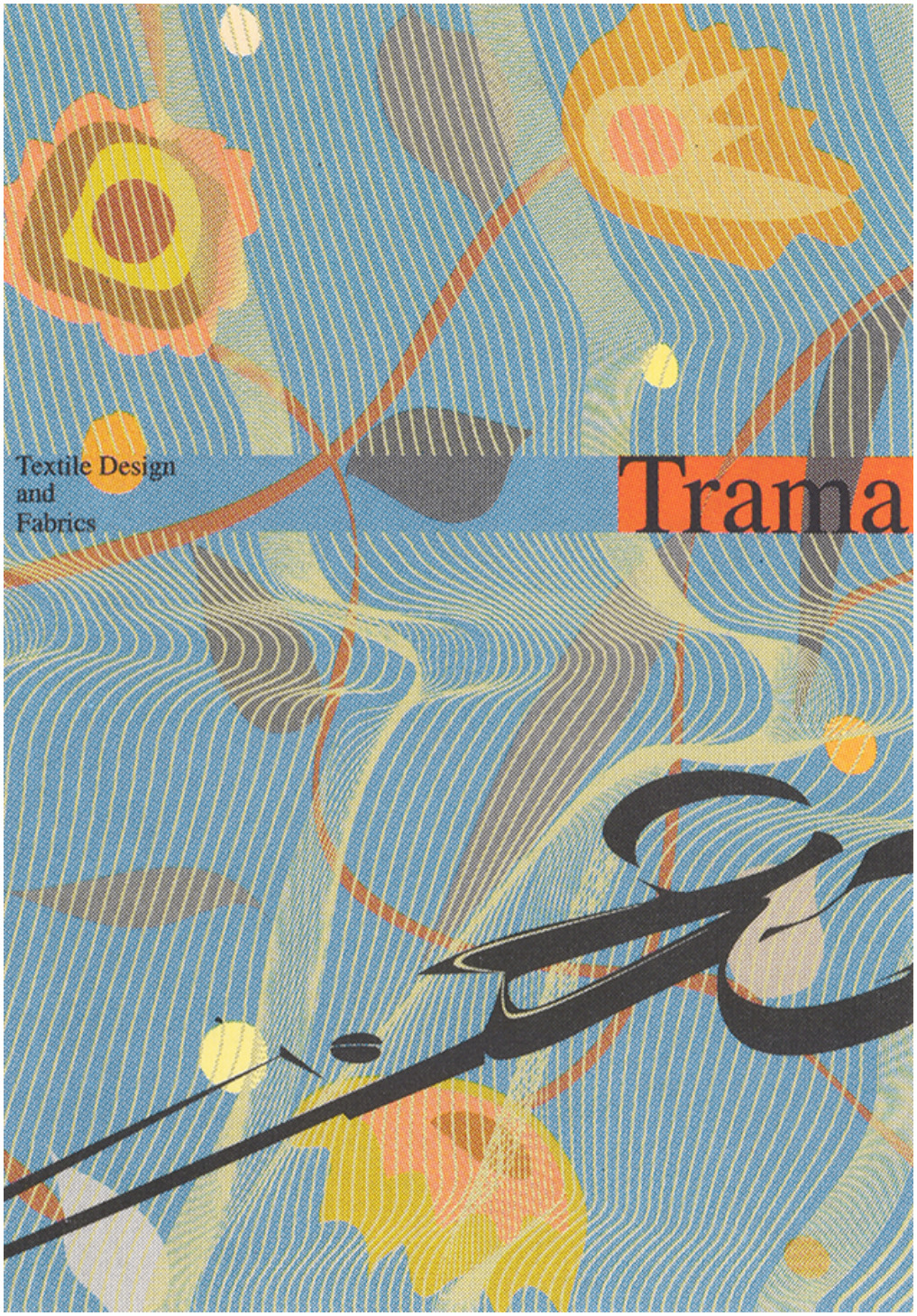

Fig. 10 Olga Burkard, Design for Trama – Textile Design and Fabrics, student work at Basel School of Design, from the course Computer Projects taught by Michael Renner, 1990, Copyright: Basel School of Design / O. Burkard

He also transferred some of the traditional educational methods at the Basel School of Design to his computer courses. For example, analytical object drawing, which was taught in analogue form by his colleagues, was continued with the computer. This was according to Michael Renner (1994) an ideal extension of the traditional, analog drawing pedagogy, however, when drawing with vector-based software, "the intuitive search for the correct angle of a line, as is usual in freehand drawing, gives way to a considered action" (Renner, 1994, p. 372). Analytical object drawings formed a base to create the traditional graphic translations in black and white, but with the computer (Fig. 9).

In the third phase called *application*, the students designed posters or advertisements. Michael Renner was convinced that a new visual vocabulary could be developed with computers, however, the new means had to be used in a way to make form and content work together, otherwise they would simply become effects (Renner, 1994, p. 356). This is illustrated by a student work designed by Olga Burkard in 1990 (Fig. 10). For the poster *Trama – Textile Design and Fabrics*, she used the possibilities offered by drawing software to create repeating, curved lines as a background. They give the impression of flowing fabric which is "cut" by a black-and-white graphic translation drawing of scissors. The design is composed of various levels of colored fields, graphics, lines and typography – a multi-layered design method that lent itself to the computer and used its effects in the service of a message.

5. Transformations

The examples above have shown that in the new courses created specifically for the computer in the late 1980s, analogue educational principles were not completely discarded but adapted and transformed. Thus, we see on the one hand a "digitalization of something older" (Eskilson, 2023, p. 91). On the other hand, a certain transformation and a shift of pedagogical focus becomes apparent, which was catalyzed by the advent of the computer. A great number of variants of a design could be produced a lot easier and quicker; the variants could easily be printed and laid out for comparison[12]. The students saved a lot of time and energy regarding manual drawing work in comparison to earlier decades. However, comparing, evaluating and selecting variants became more complex. As Michael Renner (1994) noted, the many variants would rather make students avoid making clear decisions (p. 362).

As a result, graphic design teachers had to transform educational goals and methods when using the computer in class for students to acquire a specific skill: the visually sensitive evaluation of variants and the dealing with their multitude.

The possibilities of computers, according to Michael Renner (1994), made it a lot more important to teach students how to design in a systematic manner (p. 362), thus, have a slow, structured, intentional approach. This would enable students to "deepen their design process" (p. 362) by using the computer, instead of getting confused.From the mid-1990s, it became clear that the computer would not only function as a design tool, but also as an interactive medium in visual communication. The question if the computer would shape the language of visual communication in the future became obsolete, while the question of what consequences this might have for graphic design education was still unanswered at many design schools.

In an article written for Anton Stankowski's reference book *Visuelle Kommunikation* in 1994, Michael Renner described the current state of digitalization at the Basel School of Design, ten years after the first Macintosh had been set up in the typography workshop. He explained that despite the computer-based courses, students would still learn analog drawing techniques first before moving on to computer graphics. However, he added, it was an "open question" (Renner, 1994, p. 367) if this procedure would still be appropriate for future generations of students, raised with digital technology. While this seems like a far-sighted statement from today's perspective, by the time written, questioning the relevance of analog drawing meant nothing less than questioning the cornerstone of the Basel School of Design's educational model – which did not go uncriticized by some of his teacher colleagues (Renner, 2025a). We see a certain expansion of discourse in Michel Foucault's terms – a shift in the power structures that determined what could be thought and said at the school – which was ultimately triggered by the introduction of the first Macintosh.

When recapitulating the six years under study from 1984 till 1990, we may conclude that the school can be considered an early adopter to computer technology that integrated the Macintosh into its teaching from its release. The Macintosh was initially regarded as one tool among many and since its applications were coined by technical limitations during the first years, it did not trigger an immediate restructuring of graphic design education.

However, even though large parts of the curriculum remained analog in the period under study, due to the early advent of the Macintosh at the Basel School of Design, a clear transformation process regarding educational principles already began in the late 1980s, catalyzed by the advent of PostScript, DTP and the overall improvement of WYSIWYG software. While many Swiss graphic designers were still sceptic against the computer, several teachers at the Basel School of Design encouraged students to use it, e.g. for diploma projects, and the school created specialized courses which addressed the new requirements arisen with the computer.

Most importantly, graphic design education had to find ways to teach a new skill, that of handling the large number of variants and keeping an overview of different steps of the fast-paced digital design process. At the Basel School of Design, the approach was to offer systematic, structured courses with a thorough technical training aimed to create a protected but also controlled learning atmosphere before using the computer for applied work. Even though it seems contradictory, this model has a resemblance to the Basel School of Design's educational tradition of the pre-computer era which focused on meticulous handcraft, respectively, experiencing and exploring what your hands and eyes were capable of. By analogy, facing the digital turn, at the Basel School of Design, a thorough knowledge on what the computer was capable of was considered the only way for students to stay in control instead of the machine taking command.

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NOTES

1. Next to Eskilson, 2023, see e.g. Dalla Mura, Riccini, Vinti, 2016.

2. E.g., Katherine McKoy (2022) compared the Basel School of Design to the Bauhaus in terms of its relevance to graphic design education (p. 22).

3. Those manuals from the 1960s are reprinted until today, see Hofmann, 2021 and Ruder, 2018.

4. E.g., the Zurich School of Design and the Ulm School of Design in Germany strongly reduced freehand drawing courses in their graphic design programs in the 1950s. As for a comparative study, see Bischler-Hartmann, 2024.

5. Computer technologies were introduced in the graphic industries from the 1960s on, especially in the field of phototypesetting. However, the "digital turn" in graphic design started with the advent of personal computers, especially that of the Macintosh.

6. Wolfgang Weingart's statement seems plausible, at least, concerning the advent of the first Macintosh: E.g., at the Zurich School of Design, "coding" was mentioned in the curriculum from 1985 (Höhere Schule für Gestaltung Zürich, 1985, p. 24), but the first Macintosh workstations were purchased only in 1988 (Protocol of a Team Leader Meeting, Weiterbildung Visuelle Gestaltung, Schule für Gestaltung Zurich, 12.01.1988 Unpublished manuscript. ZHdK Archive: BBE-1982-Y01-001). At other European design schools, such as the École supérieure des Arts Décoratifs (EnsAD) in Paris, France, Macintosh computers were introduced early on, but since there was no formal training provided, only interested students used the computers outside of class hours ((P. Millot & E. Mineur, personal communication, April 8 and May 3, 2025)). Even by the mid-1990s, computer-generated graphic design remained largely overlooked by a large part of the graphic design teachers at EnsAD (Délégation aux Arts platiques / Ensci, 1995), even though the school had an advanced program called "Atelier Image Informatique" from 1982. The validation of such narratives will be the task of a comparative study on Swiss and French design schools in the research project WYSIWYG – An Investigation in the Uptake of Graphic Design Software in Switzerland and France, 1980–today (HEAD Genève).

7. Lisa Pomeroy remembers that Wolfgang Weingart hoped those responsible at Apple might notice his articles and donate more Macintosh computers to the Basel School of Design, so his terminology might have a strategic background (L. Pomeroy, personal communication, March 5, 2025).

8. Surprisingly, many of the known student works from the early phase of the Macintosh between 1984 and 1990 were created by female students; the photo of the school's first Macintosh shows a female user, and the school's first computer-based design teacher, Lisa Pomeroy, is female. Further research is needed on the reasons for this proportion, however, one hypothesis might be that, contrary to today's associations, working on the computer was rather female-associated up until the 1980s. As the successor to the typewriter, the computer was not seen as a creative but rather as an executive tool and thus the Macintosh was regarded with skepticism by many graphic design "masters". Apparently, this opened discursive spaces for female graphic designers, encouraging them to use the Macintosh creatively and experimentally from its release, and enabled them to make a name for themselves in computer-based graphic design. However, this gender gap in favor of female designers (and female design students) closed once the computer was generally recognized as a "serious" tool and its reinterpretation into a techno-male-associated medium began. For a thorough reflection on the surprising visibility of women designers at the crossroads of graphic design history and computer history, see Imbert, 2023.

9. As for the concept of good design (Gute Form) in Switzerland, see Müller, 2015.

10. E.g., in 1994, Michael Renner described that 90% of his students had never used a computer before (Renner, 1994, p. 368).

11. As for a comprehensive study on black and white basic exercises in the history of graphic design education (at the Basel School of Design and other schools), see the publications by Sarah Klein, e.g. Klein (2021, p. 115–129).

12. It is therefore notable that it wasn't only the personal computer that revolutionized the design process in graphic design teaching, but its combination with a "personal printer".

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