UTOPIA COMPUTER

The »New« in Architecture?

Nathalie Bredella, Chris Dähne,
Frederike Lausch (Eds.)

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The critical concern of the book “Utopia Computer” is the euphoria, expectation and hope inspired by the introduction of computers within architecture in the early digital age. With the advent of the personal computer and the launch of the Internet in the 1990s, utopian ideals found in architectural discourse from the 1960s were revisited and adjusted to the specific characteristics of digital media. Taking the 1990s discourse on computation as a starting point, the contributions of this book grapple with the utopian promises associated with topics such as participation, self-organization, and non-standard architecture. By placing these topics in a historical framework, the book offers perspectives for the future role computation might play within architecture and society.

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JOSEPH L. CLARKE

The Art of Work

"Bürolandschaft" and the Aesthetics of Computation

Early architectural exploration of computational aesthetics in West Germany had surprising links with the "Bürolandschaft" approach to office design, which repudiated conventional spatial hierarchies and instead strove to reflect the workflow of the client organization. Bürolandschaft designer Kurd Alsleben elaborated cybernetic theories of form, creativity, and "information aesthetics" that laid the groundwork for the later celebration of complex formal systems in digital architecture. Yet, ironically, when desktop computers were introduced in offices, the metaphor of the Bürolandschaft as a giant computer broke down, undermining its utopian claims for the architecture of intellectual labour.

"The object of an [office] organizer's work is an organism, one whose essence vanishes as soon as it is dissected. It is a complex structure, a three-dimensional manifold, of which hierarchical ordering schemes are merely two-dimensional section cuts." Kurd Alsleben[1]

The emergence of the knowledge economy in the 1960s and 70s involved both new models of information processing and new aesthetic postures. These linked developments, which laid the groundwork for the eventual rise of computational architecture, first came together in post-war corporate office design. Previously, in the early 20th century, the English word "computer"—like the

1 Kurd Alsleben, Alle Umwelteinflüsse (Farbe) im Büroraum, Barmstedter Hefte 3 (Barmstedt: Velox-Verlag, 1959), 8.

German “Rechner”—referred to a person whose job was performing calculations. As late as the 1960s, offices filled with white-collar workers were, at least in certain respects, more sophisticated than machines at processing information. Digital computers were still large, elaborate calculators, widely seen by the public as mysterious and alienating—and understandably so. In the 1930s, the Nazi regime had used IBM punch-card tabulators to analyse the racial makeup of the population.[2] Wartime advances in computation were closely associated with research on cryptography and weapons systems. Even after the war, many viewed computers as symbols of oppressive governmental and corporate control.

This perception would not begin to change until the 1970s and 1980s, when computers were finally made to seem less threatening by adopting the familiar visual idiom of a mid-century office, including files, folders, a desktop, and a trash can. It is no wonder that the interface design and marketing of this new generation of computers borrowed so heavily from the material culture of office work. Some of the approaches to office organization developed in the immediate post-war decades were themselves informed by new computer science paradigms, even as human workplaces were still thought to be better at facilitating adaptation and creative decision-making. In the case of the influential “Bürolandschaft” or “office landscape” approach developed by the West German consulting firm Quickborner Team, office planning also became an important avenue for working out ideas about the new information society, founded on the values of pluralism, human well-being, and the uplifting power of art.

Bürolandschaft floor plans are well known today for their seeming defiance of rational order. In a typical design, workstations appear to be strewn helter-skelter, flouting the building’s structural grid, as though the office had been ransacked by burglars. The Bürolandschaft was an architectural paradigm with a strong artistic statement to make, to be sure, and its attitude of rebellion

2 Edwin Black, IBM and the Holocaust: The Strategic Alliance Between Nazi Germany and America’s Most Powerful Corporation (New York/NY: Three Rivers Press, 2002).

against the tedium and conformist ennui symbolized by repetitive rows of desks certainly helped fuel its popularity in the 1960s. Yet focusing too much on the apparently anarchic character of these plans obscures Quickborner's deeper intentions to project intricate computational procedures into three-dimensional space. The rise of the Bürolandschaft and its disappearance at almost the exact moment desktop computers were introduced offer important lessons about the mutual entanglement of informatic innovation, aesthetic experimentation, and utopian speculation in late modern architecture. This history remains highly significant today, as automation continues to reshape the economy and destabilize Western political systems.

Office as Communication System

The Bürolandschaft was one of many post-war architectural fantasies based on a belief that architectural order could be expressed as patterns of information, thereby introducing a new responsive dynamism to the physical environment. Yona Friedman's visions of post-industrial cities as flexible infrastructures, Kenzo Tange's metabolist plan for Tokyo as a pseudo-biological system, and Lionel March's combinatorial analyses of built form all reflected this premise in different ways. Such projects tended to remain on paper, however, or to be realized only as prototypes. The Bürolandschaft—or, as it was originally called, the MobO (from "Mobiliarordnung," "furniture layout")—was one of the only widely implemented architectural systems in which irregular configurations of design elements were posited as the emergent results of modelling complex patterns of information exchange.

Its origins lie not in abstract architectural ideals but in the everyday paraphernalia of bureaucratic work. Quickborner founders Eberhard and Wolfgang Schnelle began their careers at their father's company, Velox, which manufactured office desks, filing cabinets, folders, and bookkeeping forms. Velox rose to success on the ascendant tide of the "Wirtschaftswunder," the post-war "economic miracle" in the Federal Republic of Germany, marked by a resurgence of heavy industry and the government's active

promotion of market competition. The proximity to the socialist German Democratic Republic and the ease with which the two economies could be compared heightened the perceived ideological stakes of the West's rebound. In turn, the imperative to increase industrial output led companies to invest in developing administrative management—office work—as an essential and semi-autonomous activity, responsible for coordinating and optimizing every aspect of economic life.

It was this state of affairs that impelled the Schnelle brothers to broaden their family business by designing office layouts expressly to enhance bureaucratic communication in large white-collar workforces. Like many West German business and management experts, they were deeply impressed by American management theory. This body of research had originated earlier in the century with Frederick Winslow Taylor, whose empirical studies established a basis for arranging workplaces scientifically to improve production. Taylor's insights had subsequently been elaborated and critiqued by researchers such as Elton Mayo and Peter Drucker, who underscored the importance of interpersonal relationships and motivation in office culture. The Schnelle brothers absorbed all these influences. They were not trained architects and did not conceive office interior design as an end in itself. Rather, to them, "the planning of open offices was a component—in terms of its results the most conspicuous component—of a larger challenge: the replanning of informationally deficient work processes, that is, the rationalization of office work."[3] At their headquarters in the Hamburg suburb of Quickborn, they assembled a multidisciplinary group of collaborators with expertise in design, business, social science, and engineering.

The group was enthralled by the open, flexible, and minimally ornamented offices springing up in the United States, such as the sleek suburban headquarters of the Connecticut General Life

3 "Vorwort," in Kybernetik und Organisation: Gesammelte Vorträge des Quickborner Symposions (Quickborn: Verlag Schnelle, 1963), 4.

Insurance Company designed by Skidmore, Owings & Merrill (SOM) and opened in 1957. Connecticut General conceived its new office in Taylorist terms, as a kind of assembly line for paperwork: "The issuing and service of an insurance policy bears many resemblances to an assembly line operation in a factory," reported the internal company task force that worked with SOM. "Work passes from one phase to another in a series of patterns."[4] The Schnelle brothers regarded this building as a key precedent for what they were trying to achieve in West Germany. In addition to designing offices, they founded a small press, Verlag Schnelle, to promote their architectural vision of the workplace. One of its early books was a short profile of the Connecticut General headquarters written by Claus W. Hess, an associate of the brothers who had spent several years in the United States studying business. Hess praised the careful analysis of "workflow" ("Arbeitsfluss") undertaken by Connecticut General and its architects, on the basis of which communication patterns emerged "organically" and were mapped onto the floor plan.[5]

Even more than SOM, the West German designers believed that a firm's most important distinguishing feature was its internal communication structure. They argued that an office should be organized as a decentralized network, with no single privileged point through which all decision-making authority flowed. Moreover, unlike many American designers, they considered *spoken* communication between workers to be central to the new economy, and to necessitate different supporting structures than older, paperwork-focused offices.[6] They promised that their designs would liberate users from rote tasks to engage in more stimulating, collaborative work.

4 "Background of the Connecticut General Building," Connecticut General Life Insurance Company committee report quoted in Nicholas Adams, Skidmore, Owings & Merrill: SOM Since 1936 (Milan: Electa, 2006), 90.

5 Claus W. Hess, Bürobau mit Blick in die Zukunft: Bericht über Connecticut Life Insurance Co., Bloomfield, Conn. USA (Quickborn: Verlag Schnelle, 1959), 17. See also Reinhold Martin, The Organizational Complex: Architecture, Media, and Corporate Space (Cambridge/MA: MIT Press, 2003).

6 Walter A. Kleinschrod, "The Case for 'Office Landscape': Controversial Ideas Underlie This Planning Concept from Europe," Administrative Management 27, no. 10 (October 1966): 19.

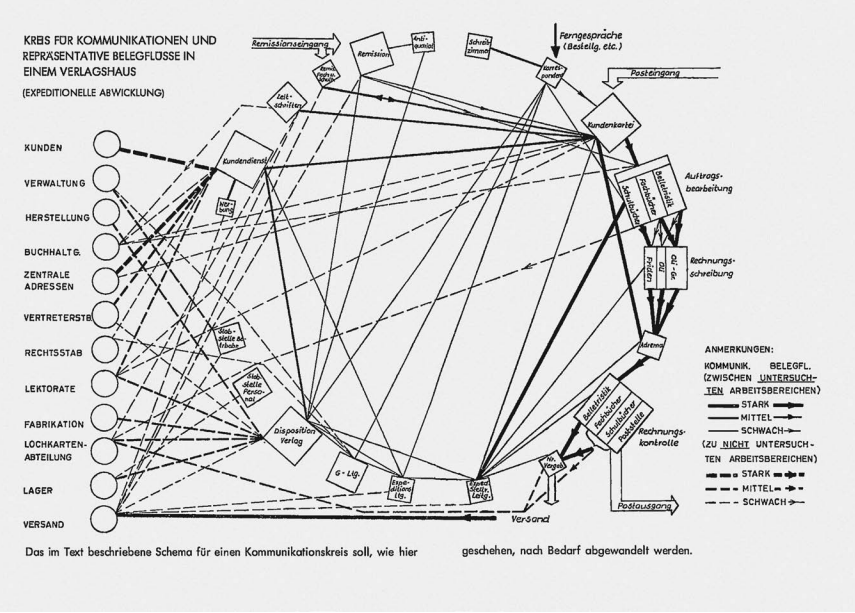


Fig. 1: Diagram of communication in a publishing company. Source: Kurd Alsleben, *Neue Technik der Mobiliarordnung im Büroraum: Versuch über eine funktionale Mobiliarordnung in freiem unregelmäßigem Rhythmus* (Quickborn: Verlag Schnelle, 1961), 16–17

The first project in which the Schnelle brothers and their collaborators fully realized this idea was the 1961 headquarters of Kommissionshaus Buch und Ton, a division of the large publishing house Bertelsmann that tracked mail-order sales of—as its name suggested—books and sound recordings. One of the aims of Buch und Ton was to predict what media its customers might want before they knew it themselves, a goal that seemed to require a radically reimagined workplace. Bertelsmann chief executive Reinhard Mohn, a devotee of Drucker's writings on corporate management, hired the Schnelle brothers to create an innovative environment for Buch und Ton's 270 office workers.[7]

7 Clemens Wischermann, "Corporate Culture at Bertelsmann in the Second Half of the 20th Century," in 175 Years of Bertelsmann: The Legacy of Our Future (Munich: Bertelsmann, 2010), 260–261.

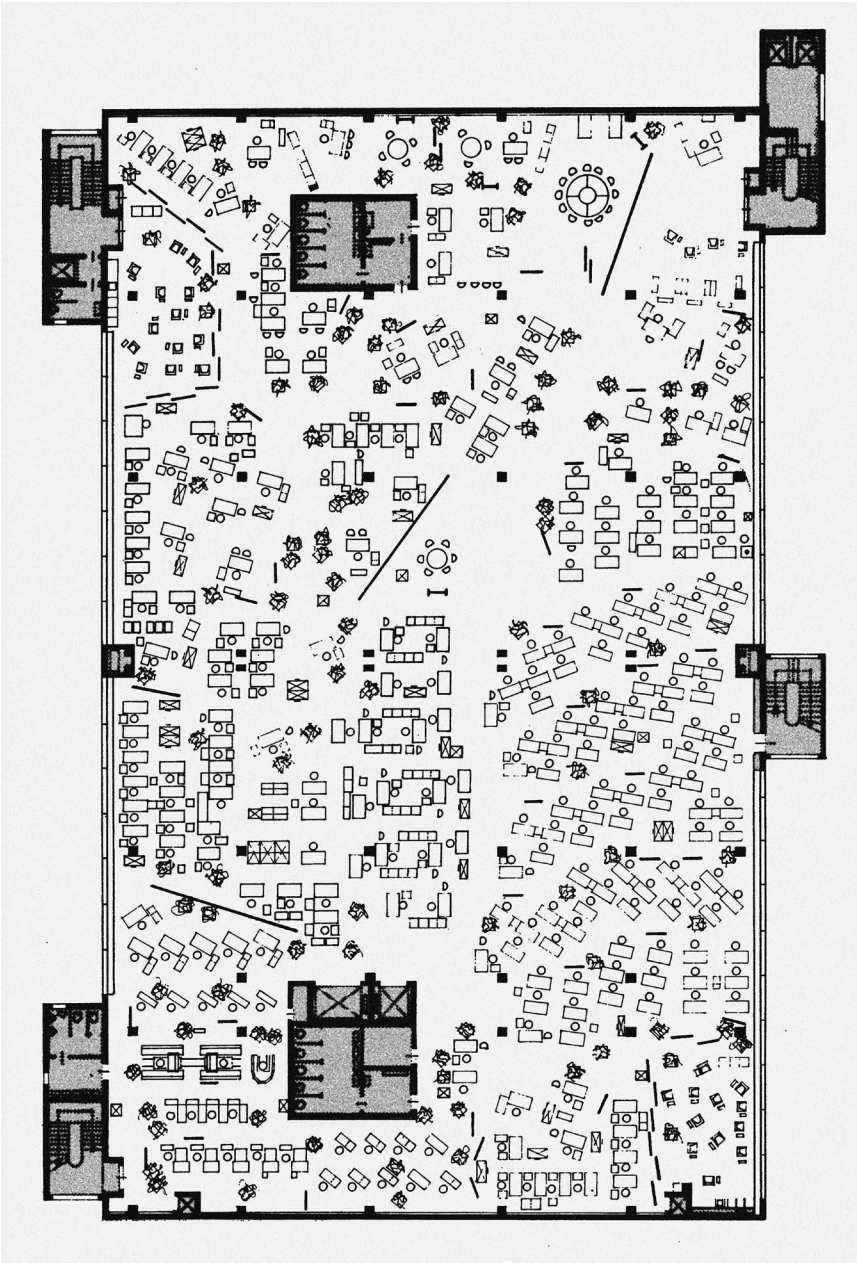


Fig. 2: Buch und Ton offices. Floor plan from *Architekt und Organisator: Probleme und Methoden der Bürohausplanung* (Quickborn: Verlag Schnelle, 1964), 45

The new office occupied a concrete-frame building designed by Walter Henn in the Bertelsmann company town of Gütersloh, Westphalia. Post-war improvements in air conditioning and fluorescent lighting made possible a large floorplate, 39 metres on its short dimension. To plan the interior, Quickborner designers charted how information travelled laterally between departments, and sought to improve the flow by optimizing the position of each piece of furniture (figs. 1–2).[8] For example, Buch und Ton's customers communicated with customer service, which was linked in turn with advertising, operations, and filing. These connections were translated more or less directly into adjacencies in plan. Departments were often juxtaposed with no partitions, and could be distinguished visually only by their differently-angled desks. Quickborner Team designed numerous offices of this kind for major companies both in and beyond the Federal Republic of Germany. Each Bürolandschaft was meant to adapt to its occupants' evolving patterns of communication like a self-regulating machine.

Free Irregular Rhythm

The elimination of private enclosures in the office reflected Quickborner's (and its clients') optimism about the information age, and at least notionally challenged class and gender hierarchies that had long characterized corporate work. Eberhard Schnelle celebrated the Bürolandschaft's "utopian horizon," thus making clear that this was not just a facility for carrying out practical tasks. It embodied a broader vision of society, a vision in which the boundaries between work and life could not be sharply defined.[9] As Kurd Alsleben, one of Quickborner's most important theorists, wrote in 1965: "One should always keep in mind that

8 Andreas Rumpfhuber, "Space of Information Flow: The Schnelle Brothers' Office Landscape 'Buch und Ton,'" in Experiments: Architektur zwischen Wissenschaft und Kunst / Architecture Between Sciences and the Arts, ed. Ákos Moravánszky and Albert Kirchengast (Berlin: Jovis, 2011), 200–225.

9 Eberhard Schnelle, "Arbeit, Bildung, Leistung," in Kybernetik und Organisation: Gesammelte Vorträge des Quickborner Symposions (Quickborn: Verlag Schnelle, 1963), 93.

Fig. 3: Buch und Ton offices. Photograph, Dt. UrhR: Bertelsmann SE Unternehmensarchiv

people *live* in an office… Human experiences don't begin when one puts on one's slippers and they do not stop upon entering the office." The Bürolandschaft was an aspirational diagram of a liberal post-industrial future for Germany (figs. 3–4).

Alsleben accordingly insisted that office design was an *artistic* challenge. Trained as a painter, he had arrived at the problem of corporate interior design through his interest in the ambient aesthetic conditions of spatial environments, including light levels, acoustics, sightlines, and air conditioning.[10] To him, the floor plan of a Bürolandschaft was an example of "free irregular rhythm." He urged that workstations be arranged to maximize significant interactions rather than in rigid rows, citing the innovations of modern dance and music: "The office planner lays out furniture from an aesthetic point of view, and thereby arrives at different solutions than someone unfamiliar with visual ordering possibilities, who knows only right angles. By the same token, everyone can perceive the rhythm of a dance, but choreography must be learned."[11]

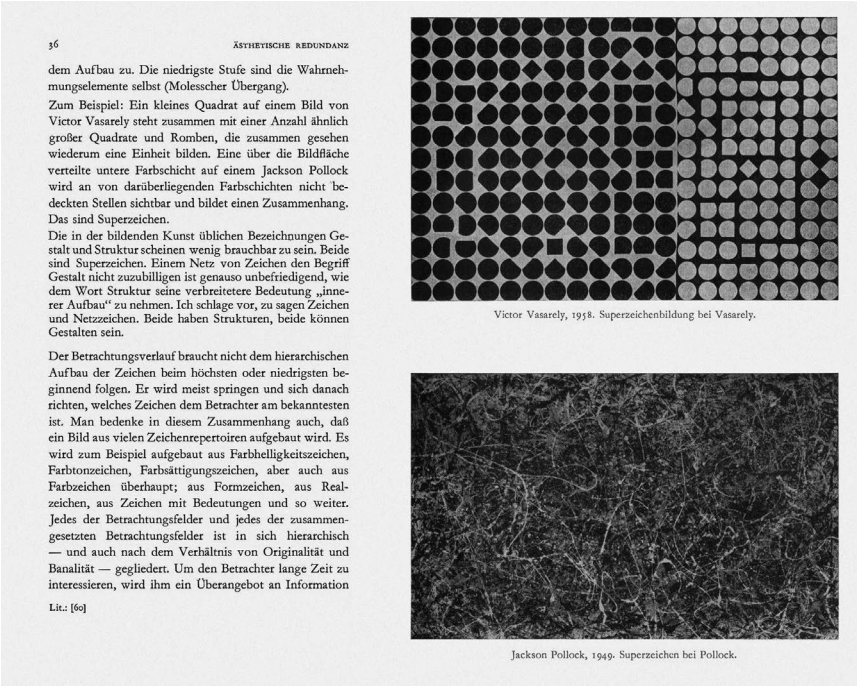
10 Alsleben, Alle Umwelteinflüsse.

11 Kurd Alsleben, Neue Technik der Mobiliarordnung im Büroraum: Versuch über eine funktionale Mobiliarordnung in freiem unregelmäßigem Rhythmus (Quickborn: Verlag Schnelle, 1961), 33.

Fig. 4. Buch und Ton offices. Photograph, Dt. UrhR: Bertelsmann SE Unternehmensarchiv

This remark illustrates Alsleben's belief that a corporate office—including both the physical workspace and the collective of people who worked in it—was as complex and singular as a work of art.[12] In elaborating this line of thought, Alsleben drew on his own research into the nature of art. He was a proponent of "Informationsästhetik" or information aesthetics, a concept that originated in the scholarship of cybernetician Max Bense. This

12 Kurd Alsleben, "Über das künstlerische Moment in Realisationsprozessen," in Kybernetik und Organisation: Gesammelte Vorträge des Quickborner Symposions (Quickborn: Verlag Schnelle, 1963), 108–118.



36 ÄSTHETISCHE REDUNDANZ

dem Aufbau zu. Die niedrigste Stufe sind die Wahrnehmungselemente selbst (Molesscher Übergang).

Zum Beispiel: Ein kleines Quadrat auf einem Bild von Victor Vasarely steht zusammen mit einer Anzahl ähnlich großer Quadrate und Romben, die zusammen gesehen wiederum eine Einheit bilden. Eine über die Bildfläche verteilte untere Farbschicht auf einem Jackson Pollock wird an von darüberliegenden Farbschichten nicht bedeckten Stellen sichtbar und bildet einen Zusammenhang. Das sind Superzeichen.

Die in der bildenden Kunst üblichen Bezeichnungen Gestalt und Struktur scheinen wenig brauchbar zu sein. Beide sind Superzeichen. Einem Netz von Zeichen den Begriff Gestalt nicht zuzubilligen ist genauso unbefriedigend, wie dem Wort Struktur seine verbreitetere Bedeutung „innerer Aufbau" zu nehmen. Ich schlage vor, zu sagen Zeichen und Netzzeichen. Beide haben Strukturen, beide können Gestalten sein.

Der Betrachtungsverlauf braucht nicht dem hierarchischen Aufbau der Zeichen beim höchsten oder niedrigsten beginnend folgen. Er wird meist springen und sich danach richten, welches Zeichen dem Betrachter am bekanntesten ist. Man bedenke in diesem Zusammenhang auch, daß ein Bild aus vielen Zeichenrepertoiren aufgebaut wird. Es wird zum Beispiel aufgebaut aus Farbhelligkeitszeichen, Farbtonzeichen, Farbsättigungszeichen, aber auch aus Farbzeichen überhaupt; aus Formzeichen, aus Realzeichen, aus Zeichen mit Bedeutungen und so weiter. Jedes der Betrachtungsfelder und jedes der zusammengesetzten Betrachtungsfelder ist in sich hierarchisch — und auch nach dem Verhältnis von Originalität und Banalität — gegliedert. Um den Betrachter lange Zeit zu interessieren, wird ihm ein Überangebot an Information

Lit.: [60]

Victor Vasarely, 1958. Superzeichenbildung bei Vasarely.

Jackson Pollock, 1949. Superzeichen bei Pollock.

Fig. 5: Pages from Kurd Alsleben, *Ästhetische Redundanz: Abhandlung über die artistischen Mittel der bildenden Kunst* (Quickborn: Verlag Schnelle, 1962), 36–37, showing works by Victor Vasarely and Jackson Pollock

theory defined the work of art as a message sent by the artist to the viewer, and sought to analyse it by drawing on Gestalt aesthetics and on the mathematical theory of communication developed by American engineer Claude Shannon in the 1940s. An artwork's information content was thought to inhere in its material reality and to be definable in objective semiotic terms as an arrangement of signs. The principles of information aesthetics were elaborated in the pages of *Grundlagenstudien aus Kybernetik und Geisteswissenschaft*, an influential journal edited by Bense and several of his colleagues and published by Verlag Schnelle.

Alsleben shared Bense's goal of rationalizing the artistic process by expressing it algorithmically. For instance, Alsleben's 1962 book on "aesthetic redundancy" explored various ways that

formal elements could enter into perceptual relationships with one another, citing visual works by Victor Vasarely and Jackson Pollock to argue that aesthetic character could derive not just from a strongly-defined figure but also from a diffuse pattern.[13] This kind of art could be analysed using statistical methods. In such cases, Alsleben wrote, the work was better understood as a process than a stable shape (fig. 5). To explore these ideas further, he eventually started creating his own computer art, using an analogue computer and a flatbed plotter to produce drawings that reflected in real time his adjustment of a potentiometer. In so doing, he became a pioneer of what Bense called "generative aesthetics."[14]

Alongside Alsleben's contributions to computer art, his aesthetic theories also helped establish a cultural argument for the distributed architectural fabric and hidden formal structures of the Bürolandschaft. The connection he drew between aesthetics, computation, and office work emanated from a distinctive view of creativity and its proper place in the post-war information society. Although Alsleben and his associates insisted that art was vital to office design, they rejected the cult of the individual creative genius. Most of the Quickborner designers belonged to what Helmut Schelsky calls Germany's "skeptical generation," born in the 1920s and shaped by their experiences of fascism, war, and often obligatory membership in the Hitler Youth.[15] After the war, they tended to distrust political extremism, eschewing Marxist visions of radical social change. There were distinct resonances with the prevailing outlook at the Hochschule für Gestaltung Ulm, the influential design school where Max Bense taught in the 1950s and Alsleben lectured in the following decade. Funded partly by the Marshall Plan, the Hochschule reclaimed the functionalist legacy of the Bauhaus, but traded in its craft methods

13 Kurd Alsleben, Ästhetische Redundanz: Abhandlung über die artistischen Mittel der bildenden Kunst (Quickborn: Verlag Schnelle, 1962).

14 Max Bense, "Projekte generativer Ästhetik," in Computer-Grafik, Rot 19 (Stuttgart: Walther, 1965), 11–13.

15 Helmut Schelsky, Die skeptische Generation: Eine Soziologie der deutschen Jugend (Düsseldorf and Köln: Eugen Diederichs Verlag, 1957).

and Nietzschean sense of historical destiny inherited from the German "Werkbund" for newer approaches based on the dispassionate, mathematical derivation of form and on an ideology of liberal pragmatism.[16]

In Quickborn, as in Ulm, there was strong suspicion of anything resembling romantic excess. Part of the appeal of "Informationsästhetik" was its promise of an alternative to 19th-century theories of art based on subjectivity and empathy. Creativity was to be conceived not as the work of an inspired genius but as a collective or "team" effort, facilitated through the mediation of appropriate techno-spatial structures and protocols. The design of a Bürolandschaft, accordingly, did not spring from the visionary insight of a single author, but took shape through a methodical process. This principle reflected a broader identity crisis unfolding in Western architecture in the 1960s, as many designers sought to ground the discipline's formal logic on scientific foundations, minimizing or at least constraining the architect's arbitrary compositional intuition. By using diagrams, the Quickborner designers established distance between author and built result, suggesting that an intricate built form could result from a nonlinear process with its own autonomous temporality.

The "free irregular rhythm" of Bürolandschaft plans did not entail much new personal autonomy for workers, however. Notwithstanding all the rhetoric of liberation associated with the Bürolandschaft, its seemingly entropic floor plans were not the aleatory result of employees' repositioning their own desks. Rather, they were the product of a rational design process undertaken by specialists, in which human beings were effectively treated as nodes on a diagram or subroutines in a computer program. The Schnelle brothers acknowledged that this approach amounted to a "Regierung mit Eierköpfen"—"government by

16 Kenneth Frampton [1974], "Apropos Ulm: Curriculum and Critical Theory," in Labour, Work and Architecture: Collected Essays on Architecture and Design (New York/NY: Phaidon, 2002), 44–63. René Spitz, Hfg Ulm: Der Blick hinter den Vordergrund: die politische Geschichte der Hochschule für Gestaltung, 1953–1968 (Stuttgart: Edition Axel Menges, 2002).

eggheads."[17] Many workers doubtless appreciated the visual and auditory stimulation of a Bürolandschaft. Nevertheless, the political limits of the Quickborner approach were widely felt by 1968, when Jürgen Habermas began cautioning that to sustain a liberal democratic society, sophisticated structures of communication within organizations must be balanced by a robust sphere of genuinely public discourse.[18]

Dead End?

What brought this problem to a head was the arrival of desktop computers in offices. When employees of information-processing companies like Buch und Ton began using individual computers, it was no longer plausible for the architectural environment itself to function as a single giant computer: the metaphor no longer made sense. This development could not have come as a great surprise to the Quickborner designers. Earlier, in 1963, the cybernetician and artificial intelligence researcher Helmar Frank had argued at a Quickborner symposium that an office, as a "sociotechnical" system for processing information, should be designed on the basis of an "algorithm" or a "heuristic program" analogous to that of a computer. He made no secret of his prediction that automation would one day make this office work obsolete: "A guiding principle of cybernetic sociotechnics is that an effectively organized sociotechnical system has the same informational characteristics that a subsequent, equivalent mechanical-technical system *will* have. To identify *future* technological possibilities *could* therefore also be to recognize *current* possibilities for the effective organization of group work. To identify future technical

17 "Muß Planung geplant werden?," interview with Eberhard and Wolfgang Schnelle, Führungspraxis, no. 3 (1965): 4–5.

18 See Jürgen Habermas [1968], "Praktische Folgen des wissenschaftlich-technischen Fortschritts," in Theorie und Praxis: Sozialphilosophische Studien, 4. Aufl. (Frankfurt am Main: Suhrkamp, 1978), 336–358.

possibilities is *certainly* to be capable of planning in advance the gradual replacement of human by machine work in a sociological system, particularly the office."[19]

Frank showed no remorse about his prediction that computers would someday automate the labour of office workers. On the contrary, he celebrated this eventuality because he expected it to free humans for higher-level creative activities. Sure enough, as desktop computers appeared in offices, they made many rote secretarial jobs redundant. At the same time, with certain kinds of work formerly done by humans now delegated to machines instead, it became less plausible that the spatial layout of the workplace could either help or hinder bureaucratic communication and information processing to any meaningful degree.

The Bürolandschaft's utopian synthesis of art, technology, and business unravelled quickly. As early as 1965, Alsleben lamented that the Bürolandschaft was becoming an "aesthetic fashion" as designers appropriated its imagery but ignored its theoretical basis.[20] A few years later, he left Quickborner Team to accept an appointment at the Hochschule für bildende Künste Hamburg, where he could focus on his artistic and theoretical pursuits. The Schnelle brothers themselves left in 1972 to start a new management consultancy.[21] The economic slowdown of the mid–1970s belied the dreams of limitless expansion, perpetual mobility, and environmental uniformity that had initially made vast open offices so appealing. As corporate real estate became a precious resource, elaborate office layouts based on workflow tended to revert to simpler grids of desks—the cheapest way to house large numbers of computer operators.[22] Facilitating direct interpersonal interaction became a less urgent concern than taming the

19 Helmar Frank, "Kybernetik – Wesen und Wertung," in Kybernetik und Organisation: Gesammelte Vorträge des Quickborner Symposions (Quickborn: Verlag Schnelle, 1963), 31, 38. Emphasis in original.

20 Kurd Alsleben, "Die Bürolandschaft und ihre subjektiven Räume / Office Landscape and Subjective Spaces," Kommunikation (1965): 77.

21 Frank Ibold, "The Development of the Metaplan Consulting Firm and Its Approach," in Wolfgang Schnelle, A Discursive Approach to Organizational and Strategy Consulting, trans. Philip Schmitz (Quickborn: Metaplan, 2008), 92.

22 John Pile, Open Office Planning: A Handbook for Interior Designers and Architects (New York/NY: Whitney Library of Design, 1978), 138.

proliferation of wires and cables that now threatened to strangle the work of the office.

Finally, in 1979, British office designer Francis Duffy, who had been an early champion of Quickborner's approach, declared: "Bürolandschaft has come to a dead end." He was now convinced that these apparently radical designs had never really democratized the workplace, but only reflected management's *image* of an ideal office.[23] Duffy rejected the idea that a designer could preordain users' interpersonal communication through the formal configuration of architectural elements—in other words, he challenged the premise of a deterministic relationship between a building's social and aesthetic programs. Offices without walls persisted, of course, but workstations were now generally packed together for maximum density, becoming the infamous cubicles widely maligned by office workers of the world as emblems of drudgery and neoliberal precarity.

It is ironic that the decline of the Bürolandschaft coincided with the period when digital computers ceased to be symbols of faceless bureaucratic administration and started taking on emancipatory, "countercultural" associations. Fred Turner has shown how, by the late 1970s, desktop computer users began to imagine themselves as forming emergent, autopoietic networks.[24] Suddenly, digital technology seemed pregnant with the potential for bottom-up social transformation—a revolutionary promise that was later reflected in a new aesthetic discourse of digital architecture. In order for computation to be imagined this way, it was no longer necessary or even desirable for webs of free-flowing information to be given material form in the physical environment of the office. It was more convenient to forget the Bürolandschaft altogether, or at least to overlook its original mission to improve information

23 Francis Duffy, "Bürolandschaft '58–'78," The Architectural Review 165, no. 983 (January 1, 1979): 54–58.

24 Fred Turner, From Counterculture to Cyberculture: Stewart Brand, the Whole Earth Network, and the Rise of Digital Utopianism (Chicago/IL: University of Chicago Press, 2006), 103–140. "Autopoietic" is Niklas Luhmann's way of describing a self-organizing communication system. See Niklas Luhmann, Soziale Systeme: Grundriß einer allgemeinen Theorie (Frankfurt am Main: Suhrkamp Verlag, 1984).

processing, lest the circumstances of its decline inspire doubts about the utopian predictions now attached to digital technology. Today, amid efforts to trace the long history of architecture and computation, the Bürolandschaft can be identified as a decisive pivot point. Quickborner Team and Verlag Schnelle were pioneers in experimenting with irregular, algorithmically generated spatial orders, intended to organize the processing of information based on cybernetic models of society and an innovative—if ultimately reductive—theory of art. Eventually, desktop computers superseded the sociotechnical system of the Bürolandschaft but inherited many aspects of its algorithmic aesthetics. Computers became "personal," and offices grew decidedly less so.

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The critical concern of the book “Utopia Computer” is the euphoria, expectation and hope inspired by the introduction of computers within architecture in the early digital age. With the advent of the personal computer and the launch of the Internet in the 1990s, utopian ideals found in architectural discourse from the 1960s were revisited and adjusted to the specific characteristics of digital media. Taking the 1990s discourse on computation as a starting point, the contributions of this book grapple with the utopian promises associated with topics such as participation, self-organization, and non-standard architecture. By placing these topics in a historical framework, the book offers perspectives for the future role computation might play within architecture and society.

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