NETWORKS: ON THE UTOPIAN QUALITIES OF TECHNOLOGY, CYBERNETICS, AND PARTICIPATION IN THE GDR OF THE LATE 1960S

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> The Marxist-Leninist Organizational Theory investigates the laws, principles, methods, and models valid in all areas of the developed Socialist system for the rational organization of systems and the processes of planning and management that take place in them and between them with the aim of achieving the highest effectiveness of the systems.[1]

Introduction: Towards the Future? Computer, Science, and Socialism

Nearly fifty years ago, on October 7, 1969,the German Democratic Republic (GDR) celebrated it twentieth anniversary. Art exhibitions in every "Bezirkshauptstadt" (district capital), political demonstrations, concerts, and festivals in the capital of Berlin were intended to generate an optimistic atmosphere. While the state Socialist Unity Party (SED) looked back at twenty years of existence, the perspective into the future was described in the brightest colors: "The GDR — that is the modern, Socialist German state that owns the future."[2] Tirelessly, the leadership of the SED under Walter Ulbricht promoted the idea that the transformation of the Socialist system towards Communism would be achieved under its rule. In this deterministic conception, science played a key role: With the help of science, the future could be forecasted accurately and with certainty.[3] An important part of the larger frame of the festivities around the twentieth anniversary, now mostly forgotten, was the grand opening of a campus for computer training and education in Wuhlheide, in the eastern outskirts of Berlin. Here, in the middle of the woods, plans were made for the utopia of a highly developed, technologically advanced, and modern Socialism within an architectural and artistic environment.[4]

This essay explores this particular scientific utopia in the GDR in the late 1960s— the Academy of Marxist-Leninist Organizational Theory (AMLO) — which, while not a fictional utopia, was still part of an imagined utopia of modern Socialism. I will argue that the architectural plan and the exhibition design of the AMLO were based on the principles of Socialist management theory and cybernetics.

1 Bundesarchiv (BArch), DY 30-IV A 2/9.09/92, Parteihochschule "Karl Marx" beim ZK der SED, Forschungen zur Arbeitsorganisation, Ergebnisse der Forschungsarbeit der Parteihochschule, Bd. 5, Oktober-Dezember 1970, Studie: "Die marxistisch-leninistische Organisationswissenschaft und einige Probleme ihrer Anwendung in der wissenschaftlichen Führungstätigkeit der Partei," 113 pages, 22.

2 Walter Ulbricht, "Bilanz und Ausblick am 20. Jahrestag der Deutschen Demokratischen Republik," *Neues Deutschland*, October 7, 1969, 4.

3 See, e.g., Elke Seefried, *Zukünfte. Aufstieg und Krise der Zukunftsforschung 1945-1980* (Berlin, Boston, 2015).

4 This essay is adapted with permission from my book, *Arbeit. Wohnen. Computer. Zur Utopie in der bildenden Kunst und Architektur der DDR in den 1960er Jahren*, which was published by Heidelberg University Publishing in 2018. See: https://doi.org/10.17885/heiup.422.613.

Richard Paulick, *AMLO*, Berlin-Wuhlheide, main entrance with the relief by Willi Neubert, view from the southeast, ca. 1969, Architekturmuseum der TU München. Used with permission.

This "future place,"[5] which only existed until 1972, can be read as a synthesis of intellectual and scientific history, political theory, visual arts, and architecture. It will be shown that the ideas which led to the design of this site for planning the Socialist utopia were at the same time driving forces of modernization and emancipation as well as of political oppression and ideological limitations. Seen in the global context of high modernity after World War II, the AMLO represented one peak of cybernetic thinking around the world.[6] However, whereas Western democracies laid the groundwork for the computer or information age of today in the 1960s,[7] conditions within Socialist dictatorships actually hindered the evolution of these ideas in later decades.[8] Ultimately, this essay presents a case study of the conflict of two ideas about the computer as a "liberty tool" and a machine of oppression.[9]

Recent research on the history of the computer in the decades after World War II — which the tech-philosopher Claus Pias has described as the "archaeology of our present"[10] because of the ongoing influences of developments of the 1950s and 1960s on our digitized society — has shown the importance of an interdisciplinary approach and the need to include socio historical, technology focused, and cultural-based approaches for a more wholistic understanding. Therefore, I structure this essay in the following way. Taking the 1969 GDR movie *Netzwerk* [Network] as an example, I discuss the

5   Martin Schulze Wessel, "Zukunftsentwürfe und Planungspraktiken in der Sowjetunion und der sozialistischen Tschechoslowakei: Zur Einleitung," in *Zukunftsvorstelllungen und staatliche Planung im Sozialismus. Die Tschechoslowakei im ostmitteleuropäischen Kontext 1945-1989*, ed. Martin Schulze Wessel and Christiane Brenner, 1-18 (Munich, 2010), 14.

6   *Cybernetics: The Macy Conferences 1946-1953*, ed. Claus Pias (Zurich, Berlin, 2003-2004).

7   See, e.g., Fred Turner, *From Counterculture to Cyberculture: Stewart Brand, The Whole Earth Network, and the Rise of Digital Utopianism* (Chicago, 2008).

8   See Benjamin Peters, *How Not to Network a Nation: The Uneasy History of the Soviet Internet* (Cambridge, MA, 2016).

9   See, e.g., Oliver Sukrow, "'Designing Freedom' — der Computer zwischen 'Freiheitsmaschine' und Kontrollapparat im globalen Kontext der 68er," in *Flashes of the Future. Die Kunst der 68er oder Die Macht der Ohnmächtigen*, ed. Andreas Beitin and Eckhart Gillen, 410-23 (Bonn, 2018).

10 Claus Pias, "Vorwort," in *Zukünfte des Computers*, 7-16 (Zurich, Berlin, 2005), 7.

ways in which social and ideological conflicts of modernization and automatization were negotiated in the visual arts. By analyzing the history and usage of the AMLO, I show, in the essay's second part, the strong entanglements of architecture, design, and cybernetic thinking in the late 1960s.Supporting an argument that Emily Thompson and Peter Galison already brought into the debate in the late 1990s,[11] I argue that the production of science and knowledge has a distinctive space and that the analysis of such spaces is important for the understanding of scientific discourse. In the third and last part of my essay, I introduce briefly the concept of a Socialist exhibition theory that would have allowed the visitors of the AMLO to deal with machines in a new way, creating an experimental and, at the same time, limited environment of human-machine interaction. I conclude with a summary of — and outlook on — the concept of historical utopias from a cultural historical viewpoint, wherein the "fulfillment" of a plan in the future was the goal.[12]

Depicting Socialist Modernity: The Movie *Netzwerk* (1969)

An example of how this cybernetic future in the GDR was envisioned through culture is the DEFA movie *Netzwerk* [Network] (director: Ralf Kirsten; script: Eberhard Panitz). The film addresses questions such as what the future of work will look like, as well as how new technologies influence the ways we work and what effects automatization and efficient control have on both an individual and societal level. Based on Panitz's semi-fictional, semi-documentary novel *Der siebente Sommer: Schwedt 1966.Porträts, Skizzen, Dialoge* (1967),[13] the movie problematizes the phenomenon of workers being confronted both with progress in science and technology and with the challenges and difficulties they present. This confrontation is visualized in the drama through different characters and roles. It is seen most clearly in the dichotomy between an older worker named "Ragosch," who has a lot of experience in the factory, on one side, and "Hans," on the other, a younger engineer fresh from university and secretary of the SED in the factory. Even though the movie's narrative explores situations of conflict, it stays within the political and aesthetic conventions of official film production at that time: The film ends with an optimistic outlook, that is, the viewer receives the positive message that all the struggles of the "scientific-technical revolution" will and can be solved under the ideological leadership of the SED.

Following the aesthetic and dramaturgical conventions of "Socialist Realism," Ragosch and Hans represent "typical people in typical

11 Peter Galison and Emily Thompson, eds., *The Architecture of Science* (Cambridge, MA, 1999).

12 For a recent work on planning and prognostics in divided Germany, see Elke Seefried and Dierk Hoffmann, eds., *Plan und Planung. Deutsch-deutsche Vorgriffe auf die Zukunft* (Berlin, Boston, 2018).

13 Eberhard Panitz, *Der siebente Sommer: Schwedt 1966. Porträts, Skizzen, Dialoge* (Halle/Saale, 1967).

14 See, e.g., Wolfgang Engler, "Der Arbeiter," in *Erinnerungsorte der DDR*, ed. Martin Sabrow, 218-28 (Munich, 2009).

15 Despite the fact that all main characters of the movie are male, Hans's girlfriend, who is a professor of math at Dresden Technical University, gives a glimpse of the idea that questions of gender (in science and on the job) were being discussed in the GDR of the 1960s.

16 See, e.g., Paul Kaiser, "Die Aura der Schmelzer. Arbeiter- und Brigadebilder in der DDR — ein Bildmuster im Wandel," in *Abschied von Ikarus. Bildwelten in der DDR — neu gesehen*, ed. Karl-Siegbert Rehberg, Wolfgang Holler, and Paul Kaiser, 166-73 (Cologne, 2012).

17 See, e.g., Wolfgang Engler, "Die ostdeutsche Moderne. Aufbruch und Abbruch eines partizipatorischen Gesellschaftsprojektes," in *Abschied von Ikarus*, ed. Rehberg, et al., 29–40.

18 On the paradox of the East German Modernity, see, e.g., Stefan Wolle, *Aufbruch nach Utopia. Alltag und Herrschaft in der DDR 1961–1971* (Berlin, 2011).

19 For the broader context, see, e.g., Gangolf Hübinger, ed., *Europäische Wissenschaftskulturen und politische Ordnungen in der Moderne, 1890-1970* (Munich, 2014); Mary Fulbrook, *A History of Germany, 1918-2014: The Divided Nation*, 4th ed. (Malden, MA, 2015), 164-82.

situations."[14] For example, Hans tells the factory employees that they need to understand modern bureaucracy as a necessary element of a successful economy. With the telephone and the printed data table with facts and figures of the factory's performance being his primary working "tools," Hans is a symbol for a new kind of worker and political activist in the factories: young, smart, rational, strategic, objective, scientific — and male.[15] By contrast, Ragosch faints at the beginning of the movie and has to stay in hospital for some days. He still holds on to the traditional ways of manual labor, relying on muscle power, experiences, and long day and night shifts to correct problems in the production line. Despite the fact that both heroes are staunch Socialist workers and believe in the regime's economic and political system, their strategies for achieving these goals are fundamentally different. While Ragosch calls his job a duty and says that only hard physical work can lead to success, even to the detriment of one's own physical and mental abilities, Hans is convinced that new methods of management and control must be implemented. On an extreme level, Hans is willing to put efficiency and rigorousness over the individual worker and his or her capacities. It would be interesting to compare the medial strategies of how workers are depicted in movies and the visual arts and how this "image" changed over the years.[16] Despite its official character, the movie does not offer simple answers to the challenges of automatization and the introduction of computing machines into the sphere of productivity. By presenting a variety of individuals and episodes, it tries to depict the complexity of the specific non-capitalist "East German Modernity" in the 1960s, which was coined by the sociologist Wolfgang Engler, among others.[17] Director Kirsten and screenwriter Panitz presented viewers with the ongoing processes of economic, social, and individual transformations of a modern society of the 1960s. In the scenes, the technological processes and other intermingled developments are prominent features. For example, many of the episodes problematize the conflict between traditional ways of working — muscle power, night shifts, manly collectives trying to overcome physical and mental boundaries — and the new challenges that are marked throughout the movie with the word "knowledge."[18] In one of the movie's central scenes, the director of the factory tells his new employee Hans that nowadays, hard work is no longer enough — what every worker need is "knowledge." The director says, "The tasks are no longer only to be solved with enthusiasm and long day and night shifts; they require knowledge."[19]

In sum, the movie *Netzwerk* shows how people react differently to new, primarily technological, developments; what the "modern" work environment means for the individual; and, finally, what role politics play in a world ever more dominated not by class struggle and ideology but by science and technology.[20] Even though the movie was not

exactly a blockbuster, it gives an interesting insight into the zeitgeist of the late 1960sin the GDR. Historians have described the last ten years of the government of Walter Ulbricht, between the erection of the Berlin Wall in 1961and the coup d'état by Erich Honecker in 1971, as "Socialist modernity" and as the decade in which science and technology played by far the most important role.[21]During the 1960s,Ulbricht's economic reforms, which formed part of the "Neue Ökonomische System der Planung und Leitung (NÖSPL, New System of Planning and Leading)," were intended to reform and renew the hierarchical system of planned business by implementing "capitalist" elements like investment incentives and limited autonomy for economic units.[22] The next section addresses the planning, erection, and functioning of the AMLO as a concrete, architectural result of the NÖSPL.

Putting Cybernetics in Its Place: The "Academy of Marxist-Leninist Organizational Theory" in Berlin

In 1969,the same year *Netzwerk* was produced and the GDR celebrated twenty years of existence, a vast architectural complex in the southeastern outskirts of Berlin opened: Five large, rectangular halls settled in the forest in which leading figures of the party, economic sector, and science would be trained with the newest developments in

Cover page of *Neues Deutschland*, October 7, 1969, p. 1 (DDR-Presse [ZEFYS], Staatsbibliothek zu Berlin).

21 See, e.g., Martin Sabrow, "Zukunftspathos als Legitimationsressource. Zu Charakter und Wandel des Fortschrittsparadigmas in der DDR," in *Aufbruch in die Zukunft. Die 1960er Jahre zwischen Planungseuphorie und kulturellem Wandel. DDR, CSSR und BRD im Vergleich*, ed. Heinz-Gerhard Haupt and Jörg Requate, 165-84 (Weilerswist, 2004); Mary Fulbrook, *Power and Society in the GDR, 1961-1979: The "Normalisation of Rule?"* (New York, 2009); Ulrich Herbert, *Geschichte Deutschlands im 20. Jahrhundert* (Munich, 2014), 727-37.

22 See, e.g., André Steiner, *Von Plan zu Plan. Eine Wirtschaftsgeschichte der DDR* (Munich, 2004); Klaus Schroeder, *Der SED-Staat. Geschichte und Strukturen der DDR 1949-1990*, 3rd ed. (Cologne, Weimar, Vienna, 2013).

20 For a history of the GDR from "below" and from an everyday perspective, see especially Mary Fulbrook, *The People's State: East German Society from Hitler to Honecker* (New Haven, 2005).

Berlin-Wuhlheide, former areal of the AMLO, ruins of the curtain of 1969, photography 2015, © Oliver Sukrow.

computer research of the GDR and learn how to "work in a Socialist way" with the computer in their respective fields. The AMLO opened in October 1969 but was shut down as early as 1972. Only the fence has survived, and nothing commemorates this important place of Socialist technological utopia in German history. The complex was built in only a couple of months and was commissioned by the Ministry of Industry.[23] The architect was Richard Paulick, a student of the Bauhaus School in Dessau before the war who was then exiled during World War II in Shanghai and later returned to the GDR, where he became one of the nation's most prestigious architects.[24] He also contributed to the Stalin-Allee in East Berlin. Paulick was famous for his organizational talent and his ability to solve complex problems like a lack of workers or construction materials. Both were important when erecting the complex in 1969. Paulick worked together with a large team of architects and designers to create a totally new kind of exhibition architecture and spatial staging related to the computer: He and his team not only developed a new kind of exposition in which the visitor was an active participant, but they also spectacularly exhibited the GDR-produced computer "Robotron 300" by presenting the machine fully functioning in its "natural" environment.[25]

Since the AMLO was only utilized for three years and since the academy was not open to the public, the academy is not part of a broader cultural memory, nor has it been explored in historical research. When Honecker took office in 1971, the academy was no longer needed and was eventually shut down. In contrast to Ulbricht, Honecker did not see technology and science as the keys to social and economic reforms toward a Socialist modernity. Instead, he and his cabinet focused primarily on housing construction and consumer

23 For a detailed discussion of the planning and building history of the AMLO, see Oliver Sukrow, *Arbeit. Wohnen. Computer*, 394-432.

24 Wolfgang Thöner and Peter Müller, eds., *Bauhaus-Tradition und DDR-Moderne. Der Architekt Richard Paulick* (Munich, Berlin, 2006).

25 On the topic of space and science, see, e.g., David N. Livingstone, *Putting Science in Its Place: Geographies of Scientific Knowledge* (Chicago, 2003), 18: "[...] scientific practice is influenced by [...] spatial settings."

goods to increase the standard of living — things that would be noticed in the short term.[26] To understand the function and the relevance of the AMLO, it is necessary to briefly elucidate the historical background that enabled the planning of such an institution. Even though Germany has a long tradition of inventing and building learning machines, and even though some specialized industries had been working with computing machines since the 1950s,[27] it was only Ulbricht's program of economic reforms of the 1960s that led to a broader acceptance of early computers in some parts of the party, government, and the planned economy. In an internal document from the SED Party school "Karl Marx" of 1970, the author explained the aims and methods of Marxist-Leninist Organizational Theory. Since the society was then situated in a transition phase, the predicted future had to be achieved by the "intensified scientific leadership of the SED," including the integration of cybernetics, sociology, psychology, pedagogy, and computing technology.[28] The overarching frame, the meta-discipline, was Marxist-Leninist Organizational Theory. It delivered the theoretical basis for the educational programs of the AMLO and should have guaranteed the leadership of the SED in science and research.[29]

Before such a position became part of the official party dogma, cybernetic thinking, strongly connected with the computer, had been labeled "decadent," "intellectual," or "inhuman."[30] The "Cybernetic Movement" was perceived in the GDR as an attempt by leading Western or American scientists to create a theory of convergence between the capitalist and the socialist system, which the party strongly opposed. However, when the first books on cybernetics were translated by the German mathematician and philosopher Georg Klaus from Russian into German in the early 1960s, it became more and more accepted in academic and economic circles.[31] The younger cadre born between the wars, which included Günter Mittag (Secretary of the Economic Commission at the "Politbüro") and Erich Apel (Chairman of the State Planning Commission), urged Ulbricht to implement planning and production tools in order to increase the competitiveness of the GDR economy. Both saw cybernetics as an integrative method to combine science and practice and to guarantee a systematic approach to all developments in society and industry that were to be centrally controlled. Since the term "cybernetics" was ideologically problematic, the GDR coined a Socialist synonym: "Marxist-Leninist Organizational Theory." It was defined in 1970 by the party in an internal document as a science that

26 See, e.g., Eli Rubin, *Amnesiopolis: Modernity, Space, and Memory in East Germany* (Oxford, 2016).

27 For the history of computing in Germany, see Herbert Bruderer, *Meilensteine der Rechentechnik.* Volume 2: *Erfindung des Computers, Elektronenrechner, Entwicklungen in Deutschland, England und der Schweiz* (Berlin, Boston, 2018); for the GDR, see Friedrich Naumann and Gabriele Schade, eds., *Informatik in der DDR — eine Bilanz* (Bonn, 2006).

28 BArch, DY 30-IV A 2/9.09/92, "Die marxistisch-leninistische Organisationswissenschaft...," 1.

29 BArch, DY 30-IV A 2/9.09/92, Fred Scheil, "Bemerkungen zur Ausarbeitung 'Die marxistisch-leninistische Organisationswissenschaft...,' " Berlin, 6.12.70, 1.

30 See, e.g., Simon Donig, "Informatik im Systemkonflikt — Der Technik- und Wissenschaftsdiskurs in der DDR," in *Informatik in der DDR — eine Bilanz*, ed. Friedrich Naumann and Gabriele Schade, 462–78 (Bonn, 2006). For a similar critique on the design of the AMLO, see BArch, DY 30/IV A 2/6.07/101, Protokoll über die Kontrollberatung der Expertengruppe zur Beurteilung der Feindisposition für die Industrielehrschau am 30.4.69, Berlin, 2.5.69, 16 pages, 4.

31 See, e.g., Georg Klaus, *Kybernetik in philosophischer Sicht* (Berlin, 1961); Igor A. Poletajew, *Kybernetik. Kurze Einführung in eine neue Wissenschaft*, ed. Georg Klaus (Berlin, 1962); Georg Klaus and Heinz Liebscher, *Was ist, was soll Kybernetik* (Leipzig, Jena, Berlin, 1965).

32 BArch, DY 30-IV A 2/9.09/92, "Die marxistisch-leninistische Organisation-swissenschaft...," 1.

33 Steiner, *Von Plan zu Plan*, 165.

34 BArch DC 20-I/4/2275, Ministerrat der DDR, 126. Sitzung des Präsidiums des MR, 29.7.70, Materialien zu den Tagesordnungspunkten, Vorlage zum Beschluß über Maßnahmen zur Weiterführung des volks-wirtschaftlich struktur-bestimmenden Investitions-vorhabens Akademie der marxistisch-leninistischen Organisationswissenschaft der DDR für die Jahre 1971/72, Anlage 2: Information, 1.

35 BArch, DY 3023/672, Büro Günter Mittag beim ZK der SED, Wirtschaftspolitik der SED, Tätigkeit der zentralen Staatsorgane und deren unterstellte Bereiche, Produktions-, Forschungs- und Ausbildungseinrichtungen. Informations- und Weiter-bildungszentrum der In-dustrie und des Bauwesens, 1968–71: Aktennotiz, Offene Probleme 1. Bauabschnitt Investitionsbau, Qualifizierungs- und Informa-tionszentrum Berlin (Wuhlheide), Berlin, 8.11.68, 1.

36 BArch, DY 3023/672, Übersicht über die Bau- und Ausrüstungsleistungen, n.d., 1.

37 Ingrid Schulze, "Farbiger Grundriß der Wirklichkeit. Zu dekorativen Wandgestal-tungen aus Industrieemail von Willi Neubert," *Neues Deutschland*, 10 January 1970, 11.

38 Sukrow, *Arbeit. Wohnen. Com-puter*, 366.

39 Architekturmuseum der TU München, Archiv, Nachlass Richard Paulick, Pauli-305-1, "Die Situation der Architekten in der DDR, Sozialistischer Städtebau, EXPO 1967 Mon-treal," 11-12.

investigates the laws, principles, methods, and models valid in all areas of the developed Socialist system for the rational design of the systems and the processes of plan-ning and management taking place in them and between them with the aim to achieve the highest efficiency of the work.[32]

Since it was understood that the modernization of the GDR economy could only be realized by comprehensive automation, Ulbricht and his fellows recognized that a special institution to teach the prin-ciples of applied computer sciences was necessary.[33] Because the existing capacities were not big enough and the existing teaching and training institutes were no longer seen as useful, Ulbricht and Mittag commissioned a specialized training center for the computer to underline the scientific and economic capabilities of the GDR's socialism in September 1968.[34]

Having been started in February 1969, the complex was nearly fin-ished when it opened in October of the same year.[35] Paulick and his team were under a great deal of pressure since the academy's planned opening was supposed to take place during the festivities for the twentieth anniversary of the founding of the GDR. Photographs from Paulick's personal archive show the progress on the construction site, while archival material in the Bundesarchiv reveals the difficulties encountered in erecting this enormous complex.[36] In architectural terms, the academy can be easily described: Paulick designed five very large windowless halls. The façade of the first hall, the foyer, and that of the last hall, the operation center, were designed more individually and bore an abstract ornament made of metal by artist Willi Neubert, so they could be recognized as the most important parts of the building complex.[37] Through the large windows, the visitor could look into the building but only at the foyer and the operation center. The abstract relief at the main façades had also been used in other contexts related to the GDR-computer industry — for example, for a theater performance by the company Robotron, which constructed the computers.[38] The other three halls looked like factory buildings. In a review from 1970, Paulick himself described their appearance as "modern" and "contemporary."[39] While the outer appearance can be described as unspectacular and monotonous, it was the interior that made the academy an architectural innovation in its own right. The open and broad structure of the halls allowed the exhibition designers to create a specific environment in which visitors

were led from one station to another without any visual or spatial barriers. And secondly, Paulick's halls created a flexible exhibition architecture that could be expanded and transformed as necessary.

Exhibiting and Designing Utopia: The Visual Culture of GDR-Cybernetics

As we have seen, there were important ideological issues in teaching and managing cybernetics in the GDR so that it would not be confused with capitalist strategies. So, the AMLO as a whole — that is, its architecture, design, and concept — needed to prove and demonstrate the distinctiveness of "Marxist-Leninist Organizational Theory" in comparison to capitalist management.[40] That explains why the exhibition shown in the halls was so important. Through its spatial and artistic appearance, the exhibition in the academy was intended to be a model for a Socialist exhibition theory and practice. Paulick and his team commissioned the state-run advertising agency Deutsche Werbe- und Anzeigengesellschaft (DEWAG) to create the exhibition design. Usually, DEWAG designed exhibitions for industry for occasions like the famous fair in Leipzig. This explains why the exhibition in the academy had a lot of features typical of industrial exhibitions and sales shows. Plus, the DEWAG underlined its exhibition concept with the theory of Socialist product propaganda to "make the viewer aware of the connection between organization and electronic data processing."[41] With its visual strategies and different stages, the exhibition in the academy represented the zeitgeist of the GDR in the late 1960s in which science and technology were no longer to be regarded as strange or threatening. The exhibition invited viewers to interact with and play with the machines. The designers intended to create an exhibition in which "the high potentials of the GDR for the future progressive formation of every part of social, political, cultural, and economic life" would become clear.[42] This aim was to be achieved in a twofold way: 1) the design of the exhibition was intended to be active, participatory, and was to motivate the viewer to engage with it; 2) architecture and design were supposed to underline the context and the systematic connection between the different stations of the exhibition: One started in the first hall with the basic principles of the economic reforms of Ulbricht and ended in the last with a realistic presentation of how the computer R300 worked and was programmed: "The division of the material into thematic complexes corresponds to the systematic structure of the exhibition. The study of the contents of each complex

40 On the design concept and theoretical-aesthetical principles of the DEWAG, see BArch, DY 3023/672, DEWAG Leipzig, Informations- und Bildungszentrum der DDR — Industrielehrschau, "Ideenprojekt für die 'Industrielehrschau 1969'," Leipzig, 11.12.68, 50 pages.

41 BArch, DY 3023/672, "Ideenprojekt...," 3–4.

42 BArch, DY 3023/672, "Ideenprojekt...," 1.
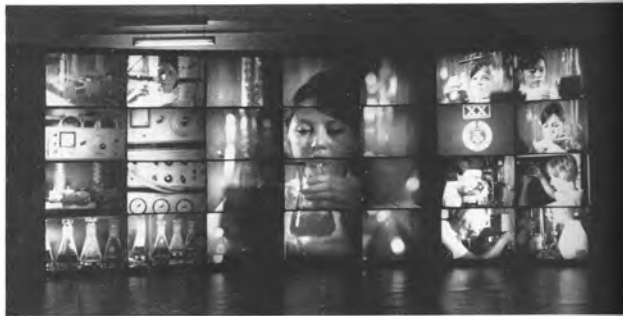
Exhibition "Partner of Medical Progress: The Phramaceutical Industry of the GDR," Leipzig, Autumn Fair 1969: "Information Phases of the Electronically Programmed Card-controlled Diorama in the 1st Information Zone," *Neue Werbung*, no. 4 (1970): 36.

presupposes the knowledge of the substance of the preceding complex."[43]

The most important methodological strategy applied by the designers, in my view, was to involve the viewer as an active element and, symbolically speaking, an essential part of a cybernetic chain. By walking through the halls, by trying out the machines,

Richard Paulick, *AMLO*, ORZ with the Robotron 300 and personnel, view from the lecture hall, ca. 1969, Architekturmuseum der TU München. Used with permission.

and by taking part in the staging of progress in Socialism, the viewer "merged" with the architecture, exhibition design, and machines. The designers spoke about the "games" to be played during the exhibition and explained that machines would control the success or failure of participants and that each course was "programmed."[44] Therefore, the participants, the exhibition, and the machines all became an ideal configuration of a utopian Socialist world of technology and science. Controlled and ruled by men, this scientific utopia represented the merging of cybernetic thinking, ideological assumptions, and economic progress. This was indeed comparable to "Project CyberSyn," Salvador Allende's program aimed at constructing a distributed decision support system to aid in the management of the national economy in Chile.[45] Allende's project, somehow a very large version of the academy in Berlin, consisted of four modules: an economic simulator, custom software to check factory performance, an operations room, and a national network of telex machines that were linked to one mainframe computer. But while Gui Bonsiepe, Stafford Beer, and their team designed an "OpRoom" where controllers sat in a circle, directly *in touch* with the computers regulating the state economy, Paulick's spatial concept for the staging of the computer in AMLO was very different.

At the end of the regulated walk along the "cybernetic chain" through the AMLO, during which visitors gained knowledge from the most

43 BArch, DY 3023/672, "Ideenprojekt…," 6.

44 BArch, DY 3023/672, "Ideenprojekt…," 25.

45 See Eden Medina, *Cybernetic Revolutionaries: Technology and Politics in Allende's Chile* (Cambridge, MA, 2011).

diverse areas of electronic data processing, cybernetics, and Marxist-Leninist Organizational Theory, they were confronted with the architectural, creative, and ideal highlight of the entire exhibition concept: The staging of the R300 in the "Organization and Processing Center" (ORZ) as a "dramatic" completion of the courses. The ORZ was where science and knowledge were presented, staged, and conveyed. Thus, one was supposed to reflect on the performative and spatial qualities of knowledge production and distribution in the ORZ of the AMLO: "If knowledge is embodied, then we need to pay attention to its bodies."[46] Due to the ORZ's prominent position within the complex, it is appropriate to concentrate on its architectural, design, and performative sides. The argument here is, on the one hand, that the ORZ generated a differentiated-distanced relationship between the users and the computer by means of architecture, and, on the other hand, that this architectural staging and the spatial arrangement of computers, devices, and spectators followed international standards. For example, the architect and industrial designer Eliot Noyes's idea of conceiving of the computer as not only a technological but also an architectural challenge set international standards in designing an architectural staging of the computer from the 1950s.[47] Finally, the next section deals with the concrete architectural measures for the representation of the computer in the spatial structure and in the intellectual context of the AMLO. As John Harwood suggests with regard to the similar staging of IBM machines:

> analyzing the interface also allows an architectural history to extend its scope beyond the building to the other, related media that were so crucial to the overall conceptions of the IBM Design Program: graphics, industrial design, multinational production networks, and exhibitions and spectacle design.[48]

A comparable architectural analysis of the ORZ needs to be linked to aspects of technological history. From a description of the concept for the ORZ, taken from the "Explanation of the Model of the Exhibition" of June 1969, it becomes apparent that the ORZ's function and equipment had enormous importance for the whole concept of the AMLO from the beginning: "In the data center, the participants are taught the importance of using the R300 for the first stage of the introduction of data processing on a broad basis in the economy of the GDR. The participant will receive specific information about the R300 as well as information about the technological process in the

46 Eric Ames, *Carl Hagenbeck's Empire of Entertainments* (Seattle, 2008), 776.

47 On Noyes, see, e.g., Bruce Gordon, *Eliot Noyes: A Pioneer of Design and Architecture in the Age of American Modernism* (London, 2006).

48 John Harwood, *The Interface: IBM and the Transformation of Corporate Design, 1945-1976* (Minneapolis, 2011), 11.

data center based on the demonstration of a program."[49] The separation of computer and auditorium space was necessary to create the specific conditions essential to the functioning of the R300 — not only the air-conditioning technology but also the protection against contamination by dust. Any disturbances in the operation would have disrupted the balance of the programmed course of the training and was to be ruled out.[50] While the interaction between man and machine was desired and even demanded in the exhibition halls, this link was eliminated in the ORZ. However, the separation was for more than just climate and safety reasons. The spatial separation of the computer from the spectators in the lecture hall recalled the spatial division of computers in "parlor" and "coal cellar" proposed by the American design theorist Edgar Kaufman Jr.: the "parlor" is the place where the controller of the computer acts, whereas the "coal cellar" is a hidden, not observable space.[51] Symbolically, the division into "parlor" and "coal cellar" suggested that in spite of all the utopian euphoria, the controlling SED was not willing to allow course participants to freely and playfully appropriate the technology. Technologies such as the computer remained regulated and were not presented as individual-subjective promises of freedom, in contrast to the typical Californian counterculture at that same time, which was negotiating new human-technology relationships in the United States.[52] When entering the ORZ, participants saw the R300 through a large glass panel that extended the entire depth of the room. It separated the lecture hall from the ORZ. The lecture room, whose rows of seats ascended as in a theater or cinema, guaranteed a good view of the staging and performances. The motif of showing and hiding played a role in the ORZ in several places: there was a curtain that could cover the glass wall between the auditorium and the computer room, there were three technical rooms with various viewing possibilities, and the machines themselves also showed some things but also hid others from view. The lighting concept, the arrangement of the seats, the guided gaze, and the R300 behind a pane of glass — all of these features reinforced the stage-like nature of this space in which science was presented, performed, and theatrically staged. Also, the personnel, the engineers, programmers, technicians, and typists played an important role in this staging of the computer in the science theater of the AMLO. During the demonstrations, they acted behind the glass, and their steps and actions could be observed and commented on by the participants. Aural communication was possible via an intercom system. It could not be ascertained from the sources whether ORZ personnel followed a defined choreography, but

49 BArch, DY 3023/672, "Erläuterung des Modells der Ausstellung des Informations- und Bildungszentrums der Industrie und des Bauwesens der DDR," Berlin, 17.9.69, 10.

50 Iwan Rhys Morus, "Placing Performance," *Isis*, no. 1 (2010): 775-78, 777: "Actively participating audiences can destroy the careful choreography."

51 Harwood, *The Interface*, 12: "[…] the space of the computer is to be divided in architectural terms into a 'parlor' (i.e., the space that the computer operator inhabits, or interface) and a 'coal cellar' (the concealed, distant space in which the machine itself operates)."

52 See Turner, *From Counterculture to Cyberculture*.

this would certainly have been in keeping with the overall theatrical character of the production. Certainly, the routinely performed operations in the utilization of the R300 were also the subject of the demonstrations. After all, the participants were supposed to gain an understanding of modern computer technology both visually and aurally. Since the computing processes of the R300 ran inside the machines and could not be shown, the display of the equipment and the human work processes formed the main didactic instrument of this training station. Visitors, therefore, had to have a considerable ability to abstract in order not only to understand the operation of the installations but also to be able to properly classify and interpret the computational processes that could not be made visible despite all the architectural-spatial-artistic opening and staging.

In sum, the ORZ of the AMLO can be seen as the creative, staged, and ideal highlight of the complex and as Paulick's most important spatial artistic innovation in the Wuhlheide. As an "educational architecture" dedicated to the demonstration and presentation of knowledge and knowledge production, the ORZ can be compared to other computational spaces outside the GDR. Like the 1963 IBM showroom in Toronto, which was designed a little bit earlier, the ORZ was all about visualization (with partial concealment), and about the spatial arrangement of the computer, separated from the viewer through a membrane-like glass front, on stage.[53] Despite all the ideological and political differences, the spatial situation played a central role for Western designers of computer showcases, as in the case of Noyes for IBM as well as for Paulick. Both intended to create functional and inspiring places of visibility for the computer as a future machine. The ORZ, like the IBM showroom, was meant to convey the message of "unquestionable moral, technological, economic, and social good that the computer represented,"[54] but under the banner of cybernetics-inspired high-tech socialism. In this respect, this space mirrored the political-ideological expectations of the technology of GDR society in the 1960s: the R300 was presented as a future machine but only to a select group of participants, and it only functioned in a strictly regulated and controlled framework. What was playful and experimental, which characterized the AMLO's exhibition and revealed approaches to a new, more individual approach to technology, gave way to a clear hierarchy and strict order in the ORZ. Technology and progress or individual interpretations could only develop in the GDR in a controlled environment: The future, which the SED aimed to realize in a manner accelerated by the

53 Harwood, *The Interface*, 162: "Replacing the stuffy atmosphere of the ocean liner with an open, modular gridded space visible from the street through large plate-glass windows, Noyes set the computer on stage."

54 Ibid.

computer, had to be controlled — no autonomous or individual de-
velopments were considered or allowed. Eventually, after the change
in power from Ulbricht to Honecker in 1971, these overarching future
expectations were replaced by new goals: The AMLO was no longer
a future place in the GDR.

Conclusion: This Was Tomorrow!

Mittag wrote in his 1991 autobiography that the economic reforms
of the late Ulbricht era were never efficient in reality. However, if we
understand the AMLO as a specific form of implementing economic
theories in practice, one could modify Mittag's critical judgment.
I suggest seeing the AMLO as an ideal "future place" of the GDR
that combined the elements of Ulbricht, Mittag, and Apel's reform
program in one designated place: the (however limited) unity of
theory and practice, new technologies and forms of diffusion and
presentation of knowledge, an overarching concept of the capacities
of science and technology for a modern society, and an optimistic
interpretation of the future as a solvable challenge for everybody. In
a similar vein, the movie *Netzwerk* — with its dialectic of "new" ways
of working with science, data, and information, on the one hand, and
the need to integrate more traditional ways like hard physical work,
experience, and teamwork, on the other — represented a fictional
"future place." But while the AMLO was the point of crystallization for
reformist approaches, an artificial counterpart against the economic
reality in the GDR, and a concrete alternative to the technophobia
dominant in large sections of the party, *Netzwerk* did not challenge
the narratives of the predicted future as seen by the party. And while
Honecker shut down the AMLO in 1971, he gave Panitz prestigious
prizes, including the Heinrich Mann Prize (1975) and the National
Prize of the German Democratic Republic (1977).

As Galison wrote in 1999, "architecture can help us position the
scientific in the cultural space; buildings serve as both active agents
in the transformations of scientific identity and as evidence for these
changes."[55] Keeping this in mind, I would ultimately suggest three
hypotheses concerning the utopian character of the academy: 1) The
AMLO was a place in which an adopted future was exhibited and
staged, in which a specific group of people were to be prepared for
this future, and a place in which an attempt was made to "natural-
ize" the computer through architecture and design. 2) The AMLO
was both a symbolic and concrete place for the ongoing negotiation

55 Peter Galison, "Buildings
and the Subjects of
Science," in *The
Architecture of Science*, ed.
Peter Galison and Emily
Thompson, 1–25
(Cambridge, MA, 1999), 3.

in GDR architecture and design on how science and technology were to be situated in the Socialist society. 3) And finally, the AMLO was a place of a Socialist way of "producing" knowledge and was planned to create an alternative to capitalist spaces of science and knowledge. That made the AMLO an exceptional example of a Socialist utopia of science and technology.

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