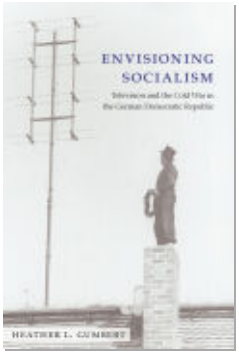
PROJECT MUSE

1. Cold War Signals: Television Technology in the GDR



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Chapter 1

Cold War Signals: Television Technology in the GDR

On 2 June 1952, the director of the State Broadcasting Committee (SRK) Kurt Heiss called the recently appointed head of the provisional television center Wolfgang Kleinert and declared, "We must start broadcasting tomorrow, as if we have a real program!"[1] These first broadcasts were haphazard. They were not intended to transmit a coherent political message, cultivate an audience, or provide viewers with an alternative to nascent West German programming. Neither did they reflect a dramatic increase in the production of television shows or access to television receivers. Instead, the decision to begin television broadcasting was a matter of occupying valuable "territory" in the Cold War: the airwaves. Faced with new international conventions governing the allocation of the European airwaves, state authorities had to use the frequencies allotted to them or lose them to other state broadcasting services. Above all, GDR authorities feared losing those airwaves to West Germany or her allies. In other words, the decision to begin broadcasting television signals in East Germany had nothing to do with the artistic, communicative, or even ideological value of the medium of television; it reflected instead the increasing importance of the airwaves in the context of the German-German Cold War.

For the GDR's Socialist Unity Party (SED) in the early 1950s, "television" was a technological problem that, if solved, could ensure nationwide and, even more important, pan-German reception of East German television signals. But early broadcast television was an enigmatic technology, and East Germans working in television spent much of the 1950s inventing the medium. Television workers focused on one of two things. Technicians and engineers developed the technology of transmission and reception, including cameras, television receivers, and transmitters capable of spreading television signals across the country. Writers, directors, actors, and cameramen, on the other hand, faced the difficult problem of creating a viable program and constructing

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the norms of a new medium. Though these two groups often worked in isolation from one another, television only emerged as a viable means of communication as a result of both groups' efforts to invent a new medium. This chapter traces the work of the technicians and engineers who created a system of distribution that spread television throughout the country, catching and ultimately overtaking radio as the preeminent medium of information, entertainment, and ideology in the GDR. The following chapter focuses on those who created a new system of production, inside and outside of the studio. Only by the end of the decade did the system emerge as a widespread and increasingly popular medium.

This chapter explores this remarkable expansion in the technology and infrastructure of television broadcasting over the course of the 1950s, which was an essential precondition for the emergence of television as a potent social and political force in the postwar period. Television technology had been under development for some time in Europe and the United States. But it had not yet been "invented": that is, technicians (primarily) had been experimenting with the technology enough to discover its particular characteristics, but no real consensus had yet emerged as to the purpose or potential of this new medium. In addition, television technology of the postwar period differed significantly from the prewar mechanical-electrical hybrid technology developed by the Nazis, for example. Television, like other aspects of socialist administration in the GDR, grew hesitantly and haphazardly in the first decade after the war. Authorities sought to solve the technological difficulties of distribution and reception in a context defined by the shifting territorial consensus of postwar Europe and the emerging Cold War competition with West Germany. This competition was both real and imagined. It took place on the ground, in the expansion of networks of transmission and the means of reception. But it also was reflected in—at the same time as it shaped—each side's *perception* of the threat of the opposing broadcasting system. At this early date, television was hardly conceived as an instrument of a manipulative, authoritarian message. Rather, it was a means to stem the tide of West German encroachment on the newly founded Republic, while laying a foundation for pan-German reception.

Inventing Television Technology

Before the Second World War, television technology was ill suited for broad use as a medium of entertainment or information. Scientists across Europe had begun experimenting with television transmissions in the late nineteenth cen-

tury. By 1914, they had invented a variety of systems that could transmit little more than indistinct shadows no farther than across the room. By 1926, it was a little better: for observers at a public television demonstration in England, "gradations of light and shade were reportedly visible, as opposed to only crude outlines."[2] The first public exhibitions of television transmissions like this one, undertaken at technological fairs such as the Berlin Radio Exhibition in the 1920s, introduced mechanical television to the public[3] and inspired amateur imaginations about the utopian possibilities of the new medium.[4] Enthusiasts could buy kits to build television receivers, and at least one devotee called for others to "build television communities."[5] Some identified lofty purposes for the technology, including shrinking the distance between far-flung family (through "visual telephony") or making possible greater understanding between peoples through programming exchanges.[6] By 1929 the mechanical-electrical hybrid television system—which used a mechanical camera but reconstituted the image by means of an electronic cathode ray tube—could transmit relatively recognizable images. But the complexity of solving the problems of early television technology—poor picture quality and limited transmission range—dampened popular enthusiasm.[7] In 1931 the *Berliner Tageblatt* reported, "It was not long ago when one heard almost daily about some kind of 'completely revolutionary' television invention, whose introduction would occur in only a few weeks. But the weeks became months and the months became years and then everything became quiet. . . ."[8] The pace of television development slowed until the late 1930s when the transition from mechanical to electrical television began to revolutionize the way that the images were produced and thus what people could see.

The relatively quick transition from experimental technology to viable mechanical-electrical system in the 1930s was due to the massive investment of European governments, especially in Germany (through the German Postal Ministry) and the United Kingdom, as well as private capital. By 1931, the German postal service had spent over two million Marks on television technology, without ever introducing the medium to viewers.[9] Public and private capital's rising interest in television technology lay primarily in the promise of the potentially huge profits to be had. Fresh from their success in marketing radio receivers, the German electronics industry held out similar hopes for the German television receiver market.[10]

After the National Socialists came to power in 1933, television technology became integral to their economic policy, military preparedness, and cultural politics. Nazi economic plans for the development of television included subsidies and tax incentives for production of television receivers, which could

both serve as a symbol of German technological superiority and go some way toward subsidizing the business community, which was struggling in the context of the Great Depression.[11] But the commercial model advocated by the Postal Ministry—the development of private reception in the interests of selling receivers—conflicted with the National Socialists' own, narrower goals for television. The Nazi government privileged military applications of the new technology, for example, investing in the development of television-related instruments of warfare such as guided bombs, radar and radar detection systems, and applications for visual reconnaissance.[12] The Propaganda Ministry also worked toward introducing public viewing facilities, hoping to disseminate "propaganda" in what it perceived as the more politically reliable environment of public reception.[13]

Public viewing began in Berlin in 1935, and the Nazis introduced a "regular program" in time for the Berlin Olympics in 1936. On the occasion of the first German television broadcast, the Nazi official responsible for television development, Eugen Hadamovsky, wrote to Hitler: "Now, in this hour, broadcasting is called upon to fulfill its greatest and most sacred mission: to plant the image of the *Führer* indelibly in all German hearts."[14] But the Nazis never quite achieved this grand vision. Only 200 receivers were sold, mostly to television facilities in Berlin, limiting television's new audience.[15] The invasion of Poland cut short the further spread of television; government plans for mass production of the "Unity Television" (*Einheitsfernseher*), scheduled to begin 1 September 1939, never transpired. Public viewing in Germany quickly ended, and most of the extant television receivers ended up in the hands of government officials. Though television became a fixture in military hospitals in Berlin and in occupied Paris (broadcasting from the Eiffel Tower), Hadamovsky's vision of widespread political agitation remained unfulfilled.[16]

Germany was not alone: the onset of war forced other European governments to shelve their plans for television and transformed the direction that American television would take as well. The British and the Soviets, in particular, had been working on the technology. These efforts focused largely on the hybrid mechanical-electronic system and differed substantially from the all-electronic systems that came into widespread use after the war. The BBC quit broadcasting in 1939, and Soviet television, which had fleetingly provided a home for German communist émigrés (and the first director of East German television) in the 1930s, went off the air in 1941.

In the United States, the war effort mobilized television technology for military use, but by war's end it had come to be defined as a medium of commerce.[17] In 1946, a year after the war ended, there were just six television sta-

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tions in the United States, broadcasting mostly local programming, to twenty thousand sets in New York City, Chicago, and Philadelphia. Work on a nationwide network of transmission grew hesitantly in the late 1940s. Rising signal interference led the Federal Communications Commission (FCC) to suspend the process of applying for new station licenses between 1948 and 1952. In 1953, the number of American television stations tripled, unleashing a "TV-buying frenzy" that led to television ownership for 60 percent of American families.[18] But American consumers often found television receivers in stores before there was much programming to tune in.[19]

By the time the Germans capitulated to the Allies in May 1945 the constituent parts of the media system were either in ruins or thought to be so thoroughly intertwined with the Nazi regime that the Allies decided they would have to be rebuilt completely. The postal and telegraph systems had collapsed, and Allied authorities closed down other elements of the media system considered to be politically suspect, such as radio, the print press, film production, and cinemas. But the media could be useful in the postwar occupation of Germany, so plans for reconstructing the media system began immediately. Allied forces seized extant media facilities across the country, haphazardly repairing damaged transmitters and equipment to get their message out to Allied troops and German citizens alike. The British launched radio service from the Hamburg transmitter with a broadcast of their national anthem on 4 May 1945.[20] That same day saw the revival of film production, when Wolfgang Staudte received permits to begin filming his famous indictment of the recent past *The Murderers Are Among Us* (*Die Mörder sind unter uns*) in the rubble of East Berlin.[21] The following week, the Soviets began broadcasting radio programming using a captured transmitter near Tegel airfield in Berlin. And by November, the American authorities had established DIAS ("Wired Radio in the American Sector," or *Drahtfunk im amerikanischen Sektor*),[22] later expanded into RIAS ("Radio in the American Sector," or *Rundfunk im amerikanischen Sektor*).

While the reconstruction of radio broadcasting, film, and the print press began immediately at war's end, television received little attention before 1948. This was a matter of using the few available resources to the occupation's best advantage. Most of the fledgling television infrastructure had been destroyed during the war, and re-development would prove both costly and time-consuming. But, more important, television seemed to have little to offer the Allied authorities. It could not do much to facilitate the military occupation of Germany or play much of a role in democratizing Germany. Film, press reports, and especially radio could publicize information on the occupation, or-

ganize teams of "rubble women" who cleared the debris from German streets, and broadcast reeducation programs that both explicitly reminded Germans of their defeat and attempted to reinforce democratic thought.[23] Given the lack of infrastructure, programming, or even a sense of television's potential, television could not.

All four occupying powers agreed that the media could be the cornerstone of democracy in Germany, but the liberal-democratic principles of freedom of speech and information were hardly the guiding principles of the media systems they each created. Instead, each sought to achieve a balance between freedom and control over broadcasting in their zone of occupation. Each hoped to inculcate democracy by allowing some freedom of information, while at the same time maintaining strict control over the kinds of things that could be broadcast over the German airwaves. They prohibited criticism of the occupation, for example, and sought to keep the language and values of National Socialism out of radio, film, and the print press. Moreover, Allied authorities sought to purge those associated with the Nazi regime from the German press and broadcasting. New screening procedures denied press licenses to anyone who had been involved with the Nazi Party, for example.[24]

If the Allied authorities could generally agree on the goals of the postwar media—to democratize Germany—as well as the limits of the media's freedoms, they differed on the kind of media system that could achieve those goals. Unsurprisingly, each favored its own media system as the model for postwar Germany. There did not *have* to be four separate services, but the Allies' inability to share broadcasting space made it so.[25] American civilian officials attempted to export American commercial broadcasting to Germany, while the British strongly advocated replicating their own model of public service broadcasting, wherein messages were much more centrally controlled. On an administrative level, American officials introduced a decentralized system in which the four American-occupied postwar German states operated their own broadcasting services, while the British, French, and Soviets implemented much more centralized systems of administration in their zones of occupation. The major concern of each of the four occupation authorities at this early date was simply to resurrect a viable media system, yet to accomplish this, they often worked at cross-purposes. The decentralized broadcasting system operated by the Americans, for example, required more, weaker transmitters (and thus more frequencies), leading to quarrels among the Allies regarding the distribution of broadcasting frequencies.[26] French administration officials fought against the encroachment of the Allied Control Council to keep exclusive control of their zone's broadcasting system. The regional disparities in media structure of the

1950s, then, were not "East" or "West" German in character, but rather characteristic of the idiosyncrasies of four separate zones of occupation.

Thus, the decisions the Allies made between 1945 and 1948 in the context of growing Cold War antagonism laid the foundation for the disparate media systems found in postwar Germany and held profound consequences for the development of television technology in the early 1950s. In 1945 the goal of "one Germany" established on the basis of liberal democracy was still possible. Occupation authorities made policy in response to postwar conditions in Germany—the administrative chaos, economic devastation, conditions of scarcity, and collapse of the German state—while pursuing the fundamental aim of creating a stable, passive, and antifascist Germany. This was particularly true of the early phase of the occupation, before the onset of the Cold War, when even the Soviets still envisioned Germany's postwar democracy along the lines of a bourgeois-liberal state.[27] Soviet control over the media, imposed between 1945 and 1948, was not out of line with the approach of other occupying powers and was not initially intended to establish a "dictatorial" broadcasting system. But, by 1947, the boundaries between East and West Germany had begun to harden, and Cold War conflict increasingly shaped Allied plans for the postwar German state.[28] The Bi- and then Tri-zone agreement united the Western Allies and created a media system characterized by a regional structure that was relatively free of the control of the federal government (and its messages).[29] Left on its own, media in the Soviet zone was a tightly managed system that broadcast a centrally controlled message. These distinct differences in media structure in East and West by 1948 did not result from an inherent political divide between liberal democracy and communist dictatorship but rather reflected the exigencies of the emerging Cold War. Television's role within this system would be defined by the increasingly aggressive and hostile relationship between the Allied powers.

Broadcasting and the German Cold War

By 1948, the emerging Cold War superseded the spirit of cooperation that had characterized the Potsdam Conference and changed the character of broadcasting on both sides of the border. The Marshall Plan, debates over superpower involvement in the Greek Civil War and the resulting "Truman Doctrine," and stalinization in Eastern Europe typified the growing antagonism between the American and Soviet "Allies." The Anglo-American allies took measures interpreted by the Soviets as steps toward the permanent division of Germany, such

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as the Bi-zone Agreement and, later, the subsequent currency reform in the Western zones, exacerbating Cold War conflict and leading to the Soviet blockade of Berlin (1948–49). With rising Cold War conflict, the goals of the Allied authorities and the Germans under their control had become more consistent. Anglo-American authorities increasingly viewed a strong, liberal-democratic West Germany as a bulwark against communism in Europe, while Soviet authorities, previously focused on denazification and instilling anti-fascism, became much more interested in supporting the goal of the German "Muscovites," to establish a communist state in Germany.[30]

Germany had become the front line of the emerging Cold War. But the Cold War was fought not on the traditional battlefields of European wars, but rather increasingly through narratives disseminated over the airwaves. Over the postwar period, the capitalist and communist worlds advertised competing visions of economic power and political freedom—the achievements of Western consumer society and liberal democracy set against communist successes (in the space race or arms production, for example) and anti-fascism. But the propagation of these competing visions could not succeed without the incredible expansion of the technology of broadcasting—harnessing the middle and very high frequency waves, setting up a network to distribute those signals, and, finally, enabling reception. Thus the broadcasting war was not just about programming but also about constructing a viable system of distribution. Between 1948 and 1952, European broadcasting and especially the German airwaves became a new and unprecedented battleground.

Since the popularization of radio broadcasting in the 1920s, Europeans had struggled over the expansion, dissemination, and use of broadcasting frequencies. During the Weimar Republic and under the National Socialists, Germany had enjoyed a disproportionately large share of the airwaves. In 1926, the first European regulatory plan gave Germany a considerable share of European frequencies, because of its relatively well-developed broadcasting apparatus. After 1939, when the Nazis went to war to expand their "living space," they conquered the remaining airwaves and could broadcast across most of Europe. In 1945, the defeat of Germany opened up the possibility of redistributing the European frequency spectrum, making it available to other countries. Between 1948 and 1953, European broadcasters convened a series of conferences to achieve a number of goals. First, they discussed the possibilities of defining a single, universal standard for television transmission; on this they could not come to consensus, however, resulting in two separate European standards. Second, they sought a solution to the problem of equitably redistributing long- and middle-wave radio frequencies to manage the massive signal interference

problems in the crowded area of continental Europe. Complicating this was the "German question": how to provision the country adequately when the Allies were advocating more for their own purposes—the occupation and the growing Cold War.[31]

The Copenhagen conference, convened in 1948, was very much a product of this period of transition between the end of the war and the beginning of the Cold War. European authorities were most concerned with increasing their share of the airwaves and were uninterested in restoring Germany's disproportionately large share of the frequency spectrum. Cooperation among the Allies had broken down so far by this time that the Allied Control Council (ACC), which still held responsibility for the administration of broadcasting in occupied Germany, was powerless to advocate for Germany's long-term interests. Instead, delegations from all four Allied powers participated in the conference—the American delegation as a non-voting observer—and independently sought frequencies in Germany for use within their own zones of occupation.[32] The American delegation requested fifteen frequency bands, almost three times as many as the British or French authorities and almost twice as many as the Soviets, including eight for American forces radio and the "propaganda" broadcaster Voice of America. Yet, to the dismay of the American authorities, their allies—the Soviets, but also the British and French—hoped to minimize the number of frequencies awarded to the United States.[33] American authorities complained to the state department that, in their view, "thus far, the British and French have not viewed German frequency problem in true light as a facet of East-West problems [*sic*]."[34] European and American delegates had diverging geopolitical interests in this debate that resulted from the burgeoning Cold War.

In the end, the conference allocated just two frequencies to each zone; the Americans received one extra, designated for military broadcasts. They were not alone in their disappointment: many European states were unsatisfied with the results of the conference—Greece, Portugal, and Luxembourg, among others, refused to sign or adhere to the agreement.[35] Rampant disregard for the provisions of the conference followed, and by 1954, illegitimate use of European frequencies had affected 45 percent of European middle-wave frequencies.[36] American authorities exacerbated this problem, developing a plan to meet their broadcasting needs by persuading "friendly" neighbors to "lend" their frequencies to the United States, through the application of economic pressure if necessary. Thus conflict over the airwaves was yet another aspect of the emerging Cold War. It was opportune for the development of television: the limitations of the middle-wave frequency spectrum led Europeans to develop

the use of the very-high frequency spectrum, making modern television transmission possible.[37]

The Copenhagen meeting and similar conferences laid the groundwork for both the technological foundation and the geopolitical rivalry of television broadcasting. Soviet authorities in Germany began developing television technology in 1949, when they instructed Director of Broadcasting Hans Mahle to assemble a staff of experienced broadcasting personnel.[38] Many were technicians who had begun working in television under the Nazis, such as Ernst Augustin and Walter Bruch. A year later, the government approved plans to build the Television Center (*Fernsehzentrum*) at Berlin-Adlershof. By that time, the area around the port city of Hamburg in the former British zone of occupation in West Germany also had become a media center. On 12 July, NWDR (*Nordwestdeutscher Rundfunk,* or Northwest German Broadcasting) successfully broadcast the first postwar German television picture. In August, the regional directors of West German broadcasting founded the ARD (the Association of German Public Broadcasting Corporations, or *Arbeitsgemeinschaft der öffentlich-rechtlichen Rundfunkanstalten der Bundesrepublik Deutschland*), a federal institution to coordinate regional television production and broadcasting across the FRG.[39] The following year NWDR began broadcasting test signals on an experimental basis and some programming as well to the neighborhoods around Hamburg-Lokstedt. By June 1952, the GDR broadcast its first test signals from the "Berlin Transmitter" between the Television Center in Adlershof, in southeast Berlin, and the city center.[40]

In the GDR, television officials within the Postal Ministry were preoccupied with the expansion of the transmission network over the next few years. They allocated funds to develop television technology and signed agreements with East German industrial partners to build and deploy transmitters around the country. This effort faced several structural difficulties that led to unexpected "delays" in the expansion of the system. In the early 1950s, television technicians found it difficult to access the technical research that would help them construct a viable system. The Cold War had isolated East Germans from the resources of the international scientific community, preventing scientists and technicians from attending international conferences on television technology and exploring the advances made in what was a rapidly changing field in more developed centers, such as Britain or the United States.[41] East German television technicians were able to visit the Moscow television center in July 1951.[42] But unlike the Russian system, the East German broadcasting system was built on the basis of VHF broadcasting; this was a technical standard left undeveloped by the rest of the East European community to which the GDR

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belonged.[43] Until embargoes against the GDR were lifted, allowing the import of newer equipment, technicians were left to replicate outmoded Nazi transmission technology such as the iconoscope (an early electronic camera) or experiment on their own with newer technology, which took time.

New transmitters gradually expanded the network, despite the difficulties inherent in meeting planning priorities with limited resources. They were able to erect transmitters of increasing strength that expanded broadcasting throughout Berlin and beyond. Through one transmitter relay, they were able to broadcast to Leipzig by August 1953. That year the Postal Ministry also contracted the construction of several transmitters to expand the network into Thuringia and central Germany. Located in the Harz mountain range and the Thuringian Forest, the transmitters Brocken and Inselberg were the crucial link between these areas and the Berlin broadcasting center. They even promised to reach parts of the Federal Republic. At 10 KW, they would be much stronger than the Leipzig Transmitter, could broadcast farther, and would prove much more valuable components of the transmission network. Yet production delays thwarted the Ministry's plans. The State Planning Commission had incorporated the transmitters into the production schedule, only to eliminate them later.[44] It took considerable correspondence among the Sachsenwerk Radeberg factory, the State Broadcasting Committee, the Ministry for Mechanical Engineering (*Maschinenbau*), and the State Planning Commission before production could be rescheduled. The transmitters then were slated for completion in October and December 1954, but those deadlines also passed without delivery.[45]

By the time that Brocken and Inselberg were up and running in 1955, authorities in the Postal Ministry were convinced that East German industry was completely unprepared to develop the requisite technology for a domestic television service. The contractors simply had not been able to deliver the Brocken and Inselberg transmitters, as well as other technology the Ministry had ordered for the Television Center, in a timely fashion. Officials further claimed that, "after small successes in 1950–1, industrial interest in our developmental task essentially plunged to zero."[46] They traced the lack of success in developing television technology to the fact that "the economic importance of the industrial production of radio and television equipment is not appreciated. . . ."[47] The development of radio and television was not the highest priority of industrial planners because East German industry had other, often more pressing, problems. Contractual obligations to the Soviets often took precedence over domestic production. The Sachsenwerk Radeberg factory, for example, was only able to build the Brocken and Inselberg transmitters after Soviet authorities withdrew their own orders for materials that fulfilled the GDR's

postwar reparations obligations.[48] And by 1956, postal officials noted that *Republikflucht* (flight from the Republic) of workers with specialized skills had taken its toll on the technical development of the service.[49]

When it came to television, East German industry was caught in a dilemma of resources: exploiting the few that were available at home, or spending valuable currency to acquire technology from abroad. More often than not, the answer was to rely on imported technology. When an economic embargo against the GDR in place in the early 1950s ended, the East Germans bought most of the necessary technology from the West. Already in 1956, the Postal Ministry had decided that fulfillment of the mandate to expand television could only be achieved through the procurement of technology such as transmitters and transmission trucks (used to broadcast signals from locations outside of the studio) from outside the GDR. Indeed, in September, the Central Committee approved the purchase of a transmitter from the West German firm Siemens in order to improve television reception in the area around Berlin.[50] In 1959, the Ministry still had to import key parts, from antennas to entire transmitters, from elsewhere including Czechoslovakia.[51]

For television officials, the development of the transmission network suffered from an apparent lack of direction in this state-controlled planned economy. By 1955 they warned that television technology was developing "along the lines of least resistance."[52] A report before the State Broadcasting Committee identified a lack of coordination among the responsible ministries, which were more interested in their own agendas than the larger plan. Lack of communication had resulted in the construction and deployment of a haphazard network of mismatched transmitters. Television sets that were built to receive a specific frequency could receive signals from one or another of the transmitters, but not all of them.[53] To East German officials this was no small problem, since it hindered reception of East German signals. But their concern went much deeper than that: in particular, officials noted that the standards of the newer transmitters made it impossible for West Germans to tune in the East German television program.[54]

The haphazard development of the transmission network complicated the expansion of reception in the GDR. This was exacerbated by the existence of a West German transmission relay, dubbed the "Broadcasting Bridge" (*Funkbrücke*) by East German authorities, that broadcast radio and television programming, along with other wireless communications (for various West German agencies and Allied troops stationed in Germany, for example) across East German territory to West Berlin. This transmission network interfered with East German signals broadcast centrally from the Müggel Hills in southeast Berlin,

making reception all but impossible west of Potsdam, and affecting signals as far south as Leipzig. But GDR authorities devised a plan to fix the situation: they would build small transmitters and place them strategically to interfere with West German transmitters, thus freeing up Berlin airspace for East German signals. This plan never came to pass, however. If implemented, East German officials would have had to give up on reaching Germans on the other side of the border, which was just as important to them as domestic reception. Focused on reaching and building a pan-German audience, they decided instead to improve reception by coordinating East and West German frequencies, converting GDR transmitters to the West German standard.

Once the transmission network was in place, the East Germans still had to equip viewers and mobilize audiences in East and West to tune in. In 1952, television reached only a handful of viewers. This was partly due to the limitations of the transmission network, but, even if television signals could have been broadcast widely across the GDR, there were few television sets to receive those signals. In July 1952, the East German television audience was so few in number (there were seven registered viewers), that when technical problems forced the DFF off the air, DFF employees reportedly could inform each by telephone that there would be nothing more to see that evening.[55] Within six months, there were seventy regular viewers; a year later, there were at least six hundred. By 1960, there were one million registered receivers in the GDR. This remarkable expansion of reception was essential for the development of television as an important tool of communication in East German social, political, and cultural life.

By the time the television program went on the air in 1952, the Postal Ministry had been developing the technology of transmission for several years, without much sense of what a television program would look like. Nor had they spent many resources making sure that, when the time came, East Germans would get the message. Domestic reception was not much of a priority for government authorities before the late 1950s. In the early 1950s, East German industry was manufacturing thousands of television sets, but these Leningrad T-2 receivers followed a Soviet design and were destined for export eastward in fulfillment of reparations agreements with the Soviet Union. In fact, before 1953, the GDR produced no sets for the domestic market.[56] Those who could boast of early access to East German programming often had one of the few remaining Nazi-era television sets, had procured one from the black market, or had bought one in the West.

The initial structural limitations on the growth of the audience persisted for some years as East German industry worked to produce sufficient sets in-

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Fig. 1. Leningrad T-2 television receiver on display at Leipzig Trade Fair. September 1953 SLUB/Deutsche Fotothek, Roger and Renate Rössing.

expensively enough to satisfy East Germans' demand for them. Early receivers were expensive: the outmoded Leningrad T-2, with its tiny screen and bulky casing, still cost more than 800 DDM to produce.[57] The Leningrad model was manufactured primarily for Soviet consumption, so those that were diverted into the East German market had to be reconstructed to receive signals in the East German frequency range, which added up to 500 DDM to their expense.[58] When they hit stores in 1953, they were sold for 3,500 DDM, an impossible price at a time when the average monthly salary was about 300 DDM.[59] East German authorities encouraged manufacturers to cut the cost of producing televisions to make them more affordable, hoping to drop prices to not more than 800 DDM.[60] Alongside these basic receivers, they mandated the production of a more expensive "luxury" model, "Rubens." In January 1954, the Council of Ministers ordered fourteen thousand of the new "Rubens" television sets, which cost the consumer 900 DDM (only 120 DDM more than it cost to produce), and five thousand of the "Rembrandt" model, for about 1,300 DDM apiece.[61] At the time, West German sets cost between 700 and 1,700 DM. The more significant difference between the two markets became clear by 1957, however, when West Germans could choose from 130 different sets.[62]

Receivers were expensive, and they bore all the hallmarks of the early broadcast period, with small screens and inconsistent reception. In 1953, the screen on the common Leningrad model was about eight inches (measured, as receivers are, on the diagonal), or not much larger than a contemporary postcard.[63] Television officials hoped to grow them to sixteen inches by the end of the year; by contrast, screen size had already expanded to twenty-two inches in the West.[64] Not just screen size, but a number of other factors affected reception of broadcast-era (very different from cable, or now, satellite) television signals. The relatively weaker transmitters of the early broadcast period produced signals that were more vulnerable to interference. Delayed signals could produce "ghosts" (secondary, shadow images that appeared to repeat the broadcast, when the set received the delayed signals.[65] Contemporary viewers complained of frequent service outages and variable reception. Viewers often described the picture as "*leicht verrauscht*" (noisy or snowy). The weather seemed to interfere easily with reception: "in humid weather—without rain—the picture and sound are good; with rain or dry, clear air there is bad reception," viewers reported.[66] Passing trucks could disturb reception. On the other hand, good reception required a significant amount of effort and some knowledge on the part of the viewer regarding the proper situation of the antenna and tuning of the receiver. Some "problems" with reception really resulted from viewers' unfamiliarity with the technology: one director of a public viewing room complained that the picture "was always distorted towards the vertical," likely caused by improper tuning of the receiver.[67] It was difficult for people to fix these problems themselves, in part because so few had any experience with television sets at all. If a receiver "broke down"—whether the fault of the viewer, the receiver, or the transmission network—the television could end up sitting in a corner, unused. Due to these issues, repair shops were overwhelmed with work orders, many of which went unfulfilled for months if the repair required replacement parts.[68]

Despite the price of the sets and the conditions of reception, there was an insatiable demand for receivers. Liaisons from the television service were pleased to discover a sort of "television hunger" in places like Frankfurt an der Oder.[69] Yet, the limited production of sets could not hope to keep up with domestic demand.[70] By early 1956, manufacturers estimated that ten thousand sets had been sold, though according to government statistics, there were more than thirteen thousand televisions in the GDR.[71] Over the next few years, television officials found that demand grew in direct proportion to the availability of receivers and tried in vain to meet it through the expansion of production

and the introduction of imported receivers.[72] Accordingly, the audience grew between 1955 and 1957 from around thirteen thousand television owners to over three hundred thousand. This number doubled by 1959, when television ownership grew to just less than six hundred thousand sets. In 1960 television ownership rose above one million sets.[73] Despite the high prices and relatively low quality of East German receivers, television ownership rose sharply, even more so than in West Germany.[74]

The Politics of Broadcasting

For some time, historians of the Cold War have operated on a number of specific assumptions. The Cold War was an intensification of long-standing conflict between East and West that predated the Second World War.[75] It was comprised of a set of events that transpired generally between the end of the Second World War in 1945 and the fall of the Soviet Union in 1991. The United States and the Soviet Union were the primary players in the conflict, though more recent scholarship is internationalizing this picture by considering the agendas, intentions, and actions of "regional" players in Europe or Africa, for example.[76] It was characterized by costly and potentially devastating economic, scientific, technological, and military competition, exemplified most dramatically in the nuclear arms race. Despite consensus on these factors, the Cold War remains a "bundle of contradictions" that historians have not yet been able to periodize with authority.[77] That is, in part, due to the fact that scholarly understanding of the Cold War has not yet fully integrated social and cultural analyses.[78] Not just treaties and summits comprised the Cold War, but "virtually everything, from the Olympics and opera to literature and space travel, assumed political significance and hence was deployed as a weapon both to marshal opinion at home and to subvert societies abroad."[79] Already in 1992, diplomatic historian Arthur Schlesinger argued that this "old-fashioned geopolitical rivalry" had intensified to the point that it threatened our very existence precisely *because* the superpower blocs were "constructed on opposite and profoundly antagonistic principles. . . . divided by the most significant and fundamental disagreements over human rights, individual liberties, cultural freedom, the role of civil society, the direction of history, and the destiny of man." Each side "saw the other as irrevocably hostile to its own essence." For Schlesinger, the "war" resulted from mistakes such as "over-interpreting the enemy," engaging in "arrogant prediction" and "national self-righteousness,"

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and approaching the conflict as a "zero-sum game."[80] That is, the Cold War was a war of ideology that was shaped by perception, speculation, conjecture, and presumption. The media were central to this war of ideology and perception.

The story of the German airwaves demonstrates the importance of perception in Cold War battles in the early 1950s. For the Germans and their allies, competition over broadcasting was the front line of the Cold War, with the goal of occupying the "territory" of the airwaves. German authorities could never be sure of where they stood in relation to their counterparts on the other side of the border. But they were often sure they were "behind." In the early 1950s, East German authorities feared the broadcasting successes of the West; by the end of the decade, however, the tables had turned. In 1958, Western commentators began warning of an East German "television offensive." Commentators believed that DFF television was not only reaching West German viewers but also seducing them with an appealing program. The Postal Ministry and other East German authorities had managed to achieve this feat by solving a number of problems that expanded the distribution and reception of television signals across the country.

In the early 1950s, radio remained the preeminent medium of communication, nation-building, and Cold War ideology, but East German broadcasting authorities were increasingly concerned about the possibility of losing ground to the West in the battle to develop viable television technology.[81] As they saw it, even though the GDR had been constructing the basic infrastructure for television since 1949, the only result of that effort had been an experimental transmission of the groundbreaking ceremony for the Television Center at Berlin-Adlershof. By contrast, the British zone was a media powerhouse, and more television stations were popping up in each state of the West German Federal Republic.

The East German government was not the only party concerned with this burgeoning competition. In 1950, American authorities argued against investment in television, reporting "practically no public interest" in the medium, which was "an unnecessary luxury," especially in the face of the occupation authorities' significant investment in the infrastructure of middle-wave radio. On the other hand, the British argued that if the Western Allies did not develop television, "the novelty and entertainment value [of television] would encourage many Westerners to buy sets designed to receive the Eastern programmes."[82] The Western Allies would be giving up dangerous ground to Soviet influence. The British founded NWDR and, in anticipation of the introduction of television service by the DFF, began operating a second program from Berlin in 1951. The decision to undertake a Berlin program was consciously ideological:

the program would reach audiences in Berlin that NWDR could not hope to reach from Hamburg and could act as a sort of "display window of the West" in the GDR.[83] It was a decision that television authorities did not take lightly: the Hamburg transmitter was too weak to transmit signals into Berlin, so it involved an expensive replication of services. That is, West German television workers had to go to Berlin and build an entirely new program. This program was at least as limited as the test program broadcast in Hamburg and consisted primarily of the transmission of topical reports recorded on 16mm film. But the newer Berlin transmitter was much stronger than the Hamburg transmitter, which meant that it could broadcast the program both to the local Berlin audience and back through the West German transmitter relay to Hamburg.[84] East German authorities referred to this system as the *Funkbrücke*—a "broadcasting bridge"—and sought to manage its influence on the GDR.

American authorities were focused on the larger goals of the Cold War and were most concerned that the Soviets were getting a head start. They feared that "Soviet" signals were infiltrating the "free world" with transmissions that crossed borders into Norway, Denmark, Finland, Afghanistan, Iran, and the front line of the Cold War, West Germany. The GDR was "busily pumping Communist TV programs over the border," and it was both easy and inexpensive (about ten American dollars) for West Germans to modify their sets to receive them. GDR television drew West Germans (especially in Bavaria) to sporting events in particular, and, disturbingly, the female announcers were "quite attractive," as well.[85] This gave the "Soviets" free rein in both East and West. In the GDR, they wielded this power heavy-handedly, forming "television clubs" that could "help fill their once nearly-empty propaganda centers. After the TV program ends, the Communists start their political discussions." This troubled American authorities, which were not sure how these "Soviet" messages were received. The U.S. High Commissioner (HICOG) reported that "Sovzone television . . . was technically poor and [its] contents bordered on inanity." Some programming "was made up almost exclusively of still pictures," and it consisted of "90% anti-American hate propaganda, . . . featuring pictures of hunger and unemployment in the U.S., policemen mercilessly clubbing strikers, etc. . . ." The report concluded that "anyone with a Western mind would consider this kind of spectacle as stupid and ineffective. However, . . . he wonders whether people behind the Iron Curtain still react with Western minds."[86] American authorities feared Soviet influence transmitted through an increasingly powerful, transnational network of television broadcasters; never mind that the Soviets were not particularly involved in domestic broadcasting in the GDR at this time. American media scholar James Schwoch argues that

American policymakers deliberately mobilized such rhetoric, aware that it did not reflect historical reality, to "capture attention and promote the particular interests of a certain group of American officials, . . . particularly . . . [at] HICOG and RIAS." That is possible. I argue instead that such reports reflect the increasing importance of the war of perception in Cold War Europe. Significantly, GDR authorities engaged in almost identical rhetoric in discussions of the politics of reception in the GDR.

Authorities' concerns about television reception among East Germans centered on two issues: how to give them access, and what they were watching once they had it. It is important that, despite the cost of producing receivers and the problem of affordability, there was little debate among East German authorities about the site of reception: it would be in the home.[87] Public viewing was only considered a means to overcome the difficult problem of providing the public with receivers. For example, postal officials considered the possibilities of *Blockempfang* (apartment house reception): the provision of television to a number of people through the deployment of a central antenna—perhaps on top of an apartment building—that fed individual receivers within the building. This strategy could have the added benefit of preventing the proliferation of ugly "forests of antennae" on East German rooftops. Planners imagined putting this kind of receiver in places such as hospitals as well but soon decided that the cost relative to the production of individual receivers was prohibitive. Certainly, this could have been a means of restricting group reception to East German signals, but that did not seem to concern officials much in this early period of television broadcasting, and, as we will see in a moment, East Germans were resourceful enough to subvert that kind of control.[88] A second, much more widely supported alternative was the placement of individual receivers in public buildings, such as in the workplace break room, the community clubs of the National Front or factories, or in the vacation lodges of the national trade union.[89] Many East Germans saw television for the first time in one of these centers. Still, officials never questioned the principle of private reception or the goal of making available affordable receivers that East Germans could buy for their homes. In any case, East Germans made their own access to television. People asked their neighbors to open their homes so they could also watch television. Tenant committees appealed to television owners in their apartment buildings to allow the group to use their television on a specific day of the month.[90] Some enterprising television owners held regular collective viewing sessions, even charging admission.[91]

East Germans were just as resourceful when it came to what they watched on their television sets. The Leningrad receiver distributed in the GDR had

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been reconstructed from Soviet standards to receive three television frequencies (or channels), while manufacturers configured other models to receive just one frequency. But NWDR often came in more strongly than the East Germans' own signals in Berlin and elsewhere, and television distributors reported that customers often requested that their expensive sets be configured to also receive NWDR. People who could not afford to buy new sets that could receive Western channels turned to a burgeoning cottage industry based on the reconstruction of existing sets for this purpose, a service that cost about 300 DDM. Postal authorities identified several shops in the Berlin area, including two located on Stalinallee in the center of Party strength in East Berlin, that specialized in reconfiguring television sets. Of two hundred sets sold in Potsdam-Werder in 1953, postal officials estimated that all of them had been reconfigured to receive NWDR.[92] One man had even cornered the market on this type of reconstruction, charging the exorbitant rate of 540 DDM for the service. "Guild Master B." was not running a secretive, underground operation either. He quarreled openly with Party members over the configuration of GDR receivers, arguing that all sets should receive NWDR, because "one can't get any [East German] broadcast stations in the GDR" anyway.[93] Postal workers characterized the practice as "illegal," but also recognized that there was no legal regulation that prevented the practice or punished people for doing it. Herr B. went so far as to initiate a court case to legitimize the service by establishing legal precedent.[94]

A much more visible symbol of West reception had also begun to appear. In 1953, postal officials began to notice 200 MHz antennas popping up on East German houses. They were easily recognizable by their short length and were perfect for receiving television signals in VHF Band III. Since the GDR could not yet transmit signals in this frequency range, the Postal Ministry could conclude only that these had to be used to receive West German television.[95] Some officials worried that even more East Germans were hiding similar antennas by installing them under the eaves of their houses. But, in the end, authorities perceived this not as a matter for proscription but one of competition. In Schwerin, for example, there were twenty television owners and likely many times that number who were tuning into West television. They concluded that if the Marlow transmitter, slated for construction in 1954, was strong enough, it would divert viewers back toward the GDR's program.[96] With the right transmitters, GDR television signals *would* reach into people's homes, on both sides of the border.

At the outset of 1957, basic problems of transmission and reception persisted, but authorities were taking measures to get programming out to the

greatest number of Germans in East and West. Areas remained that still had no television service, affected most significantly by cross-border interference. East Germans on the periphery of the DFF coverage area still complained of "snowy" pictures due to interference from Polish, Czech, or West German signals.[97] Interference in the western areas of the GDR, largely the result of differing broadcast frequencies, was most troublesome for GDR authorities, who worried that this interference would result in the loss of East German viewers to Western signals and hamper West Germans' reception of GDR programming.[98] In an effort to ameliorate cross-border interference, improve the picture quality in the GDR, and win viewers from the FRG, the Postal Ministry undertook a time-consuming and costly conversion of the broadcast standards of their equipment to the 5.5 MHz Western European standard in 1957. The government even paid for the conversion of existing television sets to the new standard.[99] The GDR was the only Eastern European country to adopt the Western European standard in the postwar period.[100] This broad conversion of broadcasting standards in the GDR suggests, on the one hand, that the state was unenthusiastic about repressing reception of Western signals in the GDR in the late 1950s;[101] on the other hand, it exemplifies the SED's fervent belief that GDR television could and should compete with Western broadcasting for the pan-German audience. State authorities were much more concerned about *Western* reception of *East German* signals.

Such measures proved successful enough that West German commentators began to worry about the encroachment of GDR signals on their territory. By 1957, Western commentators had identified what they perceived as a "television offensive" against the Federal Republic. In January 1958, the newspaper of the West German Social Democratic Party, *Vorwärts*, published a report that claimed that television was now taking its place alongside radio in the "war of the airwaves." In the GDR, the author warned, "television towers are supposed to shoot out of the ground like mushrooms along the borders . . . and in the television studios the first Propaganda-cadres of this 'airwave offensive' are being educated. Instead of 'steamroller tactics,' [they] will henceforth attempt to fascinate the West German television audience with humor, sex, and jazz."[102] This commentator warned that, in the war of the airwaves, the field of battle had changed: no longer was the GDR acting defensively, trying to keep Western signals out of the GDR as it had in the period of the *Funkbrücke*; now it was going on the offensive. The GDR had built new, stronger transmitters and was positioning them to broadcast signals into Hesse, northern Bavaria, and Lower Saxony. Soon, communist signals from the GDR and their allies, the Czechs, would cover the entire area of West Germany. Similarly, a *Spiegel* commenta-

tor argued, "even half of the East-Zone's transmitters would be enough to provide the so-called GDR with a television program. All of the other transmitters in the Zone are positioned so that they can deliver the East-Zone program to the entire zonal border area (*Zonengrenzgebiet*)."[103] For these commentators at least, television in the GDR was now ready to take its place in the ideological battles of the Cold War.

Conclusion

Over the course of the 1950s, East German technicians transformed the possibilities of television technology in the GDR. Their work laid the foundation for television to become not only an important tool of information and ideology, but also a veritable social force in East Germany by the early 1960s. When the GDR was founded in 1949, television consisted of a few leftover bits of Nazi-era technology. National Socialist, American, and Soviet television, understood to be important precursors that blazed a path for early television elsewhere, were, for a number of reasons, not effective models for the East German service. Nazi television was based on technical standards that were hopelessly outdated by 1949. Soviet policies hindered rather than helped the development of early television in the GDR, and their own television was based on different technological specifications. In particular, Soviet policy privileged the fulfillment of postwar reparations over the development of a strong indigenous economy, draining the resources of the nascent television system. Certainly, the policies of all four of the occupation authorities demonstrated a significant lack of coordination in the reconstruction of the postwar media system in East and West. Decisions made before the foundation of separate German states did much to shape the regional peculiarities still evident by 1991. But what this story also shows is how important the technology of television became because of the context of the Cold War. Even before the introduction of programming, television played an important role in the Cold War battle between the German states. East German technicians had to solve the problems of distribution and reception, a process that was fraught with difficulty. They made important decisions that shaped the GDR's television system, privileging, for example, the competition for a pan-German audience over securing a broadcast network that could reach only East Germans. The technology of dissemination secured the future of broadcasting and reinforced the territorial boundary between the two German states.