Preparing for landing, ready for take-off: zoning noise pollution as spatio-temporal practices at Berlin-Tegel and Berlin-Tempelhof Airport (1965-1975)

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Preparing for Landing, Ready for Take-Off. Zoning Noise Pollution as Spatio-Temporal Practices at Berlin-Tegel and Berlin-Tempelhof Airport (1965-1975)

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Abstract: *»Achtung Landeanflug, alles bereit zum Starten. Die Begrenzung von Lärmbelästigung als raum-zeitliche Praktiken an den Flughäfen Berlin-Tegel und Berlin-Tempelhof (1965-1975)«.* The article outlines the spatio-temporal dimensions of air traffic noise and its relation to urban planning and the presumed conditions of public health. Placed in the setting of Cold War Berlin, the measuring and the localization of noise pollution becomes, step by step, a social and political issue. Emerging environmental awareness started challenging the well-established top-down planning procedures concerning inner-city territories. In this essay, the implementation of noise pollution zones at West Berlin airports is linked to modes of policing an urban soundscape, in particular when it comes to the spatial and temporal annoyance induced by noise. When combating air traffic noise, new social movements and environmental experts face different sets of hegemonic rules that organize airspace. This struggle requires a different logic of gaining and "doing territory" than on the city's street level.

Keywords: Sound studies, noise pollution, maps, air traffic, planning, urban space, territory, spatio-temporal relations, acoustic ecology, Cold War Berlin.

1. Introduction

The drawing presented below, "Einflugschneise 1974", traces the entry lane of Berlin-Tempelhof airport. A boy, located in the center of the piece, is holding his ears while an airplane crosses the scenery. The youngster is waiting for friends to go play outside in the afternoon. Over his head an airplane prepares for landing at Berlin-Tempelhof airport, most likely a Boeing 727-200. The place imprinted in the drawing is situated in the West Berlin borough of Neukölln. Altenbraker Street number 12 to 20 is located in the eastward approach path to the airport. If a plane is starting or landing in this space, it pro-

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duces a noise emission peak. Such a peak of annoyance propagates ahead of urban space, marking a temporal slot of high sound pressure. Various constellations of time, space and sound connect airports and their environments, linking planning procedures of airports to planes "doing space" by intervening and manipulating airspace above a city.

Image 1: "Entry Lane (1974)"

Source: International Institute of Social History (Amsterdam), CSD BG E32-502, Rohlfing, V., Einflugschneise (1974), Berlin Neukölln, Altenbraker Strasse 12-20, <http://hdl.handle.net/10622/30051002733290?locatt=view:level2>; <http://search.socialhistory.org/Record/1235111/Details> (accessed August 21, 2013).

2. Zoning Noise Pollution at West Berlin Airports

The spatio-temporal practices of aircrafts apply various kinds of pressure to the environment. They are framed by a perspective that focuses on issues of mobility and traffic management. Environmental and public health issues have been, for quite a time, out of the scope. This article links the implementation of noise pollution zones at West Berlin airports to modes of policing the noise induced spatial and temporal annoyance in an urban soundscape (Southworth 1969; Schafer 1973, 1977). To be more precise, Neukölln's Altenbraker Street lies in a second-stage noise pollution zone. Therein, airplanes are producing an average sound pressure of 70 decibels during the daytime. Daytime means in this respect a period from 6 am to 10 pm. This calculation reduces the relevance of the individual noise event peeking out of the constant background sound.

The following reflections contour an approach that links the spatio-temporal practices of evaluating aircraft noise to the capacities of mentally and socially processing auditory information. Such processing occurs in terms of the information perceived through the ear and converted by the sensorium, and with respect to individually appropriating the urban sound and mapping out the diverse and diffuse sources of a soundscape along social, cultural and group specific lines of interpretation.

An entangled and in-depth analysis of sound, noise and environment requires the marking of different levels of temporality and time elapsed within Bakhtin's (1989 [1975]) chronotopos as well as the examination of the assertive environmental knowledge various groups of governmental and civil society agents provide and bring into public dispute concerning what sources of noise contemporaries have to hear and endure (Lindenberger 2004; Bijsterveld 2013). However, rather unstable assumptions underlie the logic of collecting and processing data and the limiting of values in terms of noise emissions. Acoustic events in urban space transform. The sense switches the register. The background noise gets a different classification. The noise measured over a period of time is established in a data record. The emissions are then calculated, and in a further step, they are determined within the logic of boundary values. Such acoustic emissions are sonically diverse but stretched across the urban soundscape (Schafer 1973, 1977). A map is a medium of storage; it condenses the plurality of sounds and their marking capacity. It shifts the character of such landscapes of sound and noise towards a present scenery of observation, reorganizes the sonic dimension of public space in the shape of a rare-show screen. A noise map provides a view into the physical condition of acoustic information. Switching the sensual register from listening to watching transforms the data compiled beforehand and swaps the frame of interpretation. From this angle, aircraft noise contains a spatial and a temporal component that has to be understood within its practices of impacting urban space and environment.

Researchers from the Institute of Aircraft and Air Transportation of West Berlin's Technical University have scaled the acoustic emissions in the area close to Tempelhof and compiled a noise map. In April 1970, it was handed over to the Senate's Administration for Traffic and Business,[1] and was followed by a similar charting of Berlin-Tegel airport surroundings in 1971.[2] In the evaluation of the airport noise survey, Manfred Fricke, Professor of Air

[1] Landesarchiv Berlin (LAB), B Rep 016, Nr. 505/2, Senator für Bau- und Wohnungswesen, Vorläufiger Lärmschutzbereich mit den Dringlichkeitsstufen, Flughafen Tempelhof Ostseite, 3. Entwurf, [Bearbeiter Hr. Drese, Maßstab 1: 40000], Berlin, 20.04.1970.

[2] LAB, B Rep. 016, Nr. 507/2, Der Senator für Bau- und Wohnungswesen, Lärmschutzbereiche Flughafen Tegel – Ostseite – Vorentwurf, [Anlage 4, Bearbeiter Hr. Drese, Maßstab 1: 40000], Berlin 01.04.1971.

Transportation and Flight Security Research, established the basic principles for a zoning policy that supports the monitoring of sound emissions within the environmental conditions of the cityscape. The maps fix spatio-temporal practices of traffic planning. The charts keep information available for governmental administration of air traffic issues. They store knowledge in a mediated form, fully in line with the hierarchic and hegemonic logic of early 1970s policy-making. Data collected in maps provide opportunities for intervention into urban space, into imagined, governed and lived space (Lefebvre 1972 [1970]).

From the 1970s onwards, limiting aircraft noise becomes an important arena of public debate, an issue of public hearing and a permanent issue of civil society's growing environmental awareness. But challenging aircraft noise from a civil-society perspective signifies the regulated boundaries of political participation when coming to terms with the logic of traffic planning, mobility and economically determined appeal of a city's business utilities. In the Cold War Berlin constellation, public concerns regarding the traffic-related nuisances and annoyances – coming from aircrafts, cars or trains – were widely effaced when it came to sticking to previous decision-making. Local populations and the environment they shared were the weak elements within the top-down spatio-temporal management of traffic in West Berlin.

3. Contouring Spatio-Temporal Practices within Soundscapes

Approaching paths to airports are settings of imagined space. Airplanes cut across in subsequent temporal units. In those timed corridors of landing and starting, machines constitute spatio-temporal practices that massively affect the acoustic constellations of their environments. The emissions and disruptions produced by air carriers over time are not equally distributed in governed and lived space. The areas adjacent to airports get a bigger share without being fully compensated.

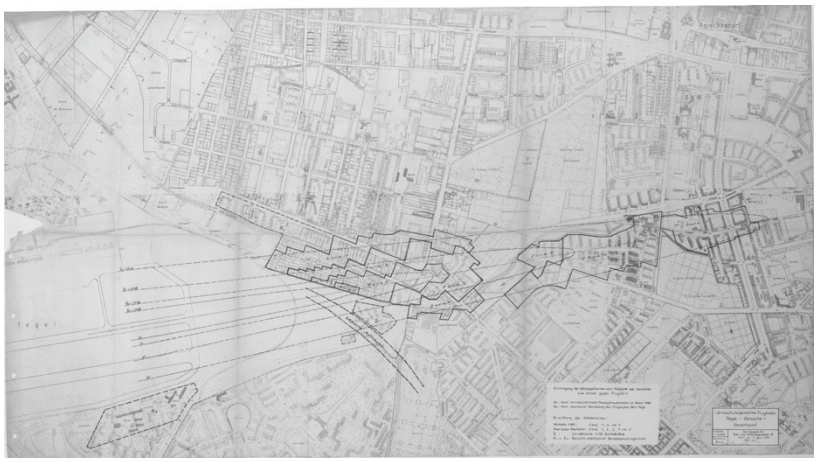
The compilation of noise maps of Berlin-Tempelhof and Berlin-Tegel, drawn in 1970 and 1971, blank off the potential public health damages and impairments induced by airplanes. The movement of any airplanes assigned to an occupying force in West Berlin was excluded from the measuring of aircraft noise emissions. The movements of such aircraft were not considered relevant and were cut out of the visualization of environmental nuisance. Visualizing aircraft noise entails regrouping a specific set of information that has been determined acoustically beforehand. A negotiation of the social costs of mobility is nurtured by diverse spatio-temporal implications regarding the mediation of interests between administrations and population groups. Filtering noise is a technological mode of containing annoyance. The logic of measurement is an

additional filtering function, intervening in processes of evaluating a given soundscape.

This approach to noise emissions and the general agreement concerning the validity of measuring allows the implementation of modes of zoning in the patterns of urban space. It delivers the fixing of a status-quo level of noise emissions in order to further debate specific requirements in terms of noise abatement. What does the measuring unit Decibel (dB) account for? The measure dB stands for the level of sound pressure in the spatial and temporal distance of a sound from a source. Acoustic information propagates through space and traces temporality to a 24-hour time span. A decibel is not a specific figure, but a calculated and highly condensed average. A specific filtering provision in the measuring process, figured in the acronym (A), adjusts the proportion to what is presumed to be an average human hearing capacity. Within this delineation of the limit value, the single acoustic events occurring along a timeline are attenuated.

3.1 Determining Entry Lanes and Zones of High Noise Emission at Berlin-Tegel Airport

Image 2: Zones of Aircraft Noise, Berlin-Tegel, Eastbound Entry Lane, 1971



Source: Senator of Building and Housing, 1971, LAB, B Rep. 016, Nr. 507-2.

Throughout the 1960s, West Berlin Senate's Business and Traffic Administration suggested a policy of zoning high noise emissions in order to limit the negative impact of air traffic in adjacent local communities. Such a policy of zoning public space supported a key argument that a full extension of Berlin-Tegel's landing runway was as necessary as the building of a new check-in terminal that finally opened in November 1974. For the amount of aircraft

movements increased significantly during the 1960s and the quantity of flights calculated in advance was overrun by the actual figures. As an immediate effect of the building of the Berlin Wall in August 1961, taking a direct flight to Berlin became an appropriate option for every third visitor to Berlin. The number of passengers nearly doubled in the following years. In a meeting of the Berlin parliamentary commission of traffic issues in January 1965, the Senator of Businesses and Traffic, Otto Theuner, and his governmental officials Dr. Lieser and Mr. Heinecke claimed that "during peak hours the terminals at Tempelhof are charged to capacity. And the facilities at Tegel are already far beyond that."[3] Building a new airstrip of 3,300 meters length was already outdated at that point. But a report by Berlin's Technical University suggested a westward extension of the runway that would match noise reduction purposes.

> The westward extension of the Tegel landing strip would shift the point of starting and taking-off in eastern direction, so that aircrafts flying over densely populated areas – especially the borough of Wedding – have already reached an altitude that would reduce noise emissions.[4]

An extension of Tegel runway was on top of the political agenda. All new types of airplanes and jets were then able to start in westerly direction on four out of the five days of airport operation. From the perspective of the Berlin Traffic Administration, a different planning of approaching paths helped to limit aircrafts striding across populated areas of the city. The western suburb of Spandau would benefit most from such a solution.[5] It was widely expected that such an extension would minimize the noise emissions in the neighboring parts of Wedding and Reinickendorf[6] as well. Certain weather conditions, especially when severe winds blow from the East, would press down airplanes starting in a western direction. In such weather situations, flights were supposed to take off from Tegel towards Wedding – and, of course, the planes stride across the East Berlin boroughs of Pankow and Prenzlauer Berg, because a wider bend is necessary. At every fifth operating day on average, the noise-induced annoyance would then cover a slightly larger part of Reinickendorf and Wedding and only attain the level of lively road traffic.[7]

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[3] LAB, B Rep. 016, Nr. 510/1, [Senatsverwaltung für Bau- und Wohnungswesen Berlin] Protokoll über die 18. Sitzung des Ausschusses für Verkehr und Betriebe des Abgeordnetenhauses zu Berlin – IV. Wahlperiode, 28.01.1965, fol. 418-20, fol. 418: „in Spitzenstunden schon heute die Abfertigungsanlagen in Tempelhof bis zur Grenze der Kapazität, in Tegel über die Leistungsfähigkeit hinaus beansprucht."

[4] Ibid., fol. 418: „Diese Verlängerung nach Westen verschiebe den Start- und Abhebepunkt in östlicher Richtung, so dass die Maschinen über dicht besiedeltem Gebiet – insbesondere Wedding – bereits eine solche Höhe erreicht hätten, daß der Lärm verringert ist."

[5] Ibid., fol. 418.

[6] Ibid., fol. 418.

[7] Ibid., fol. 419.

In the view of the Senate's Administration of Traffic and Business, technical innovation in terms of aircraft engines is the main reason for such a low-key broadening of zones affected. The administration's hegemonic argument presumes that the 1960s jet engines are not any louder than older types of aircrafts with reciprocating engines. Assuming that the population is widely accustomed to the noise emissions and sound pressure air plane engines generate, the Senate's Administration of Traffic and Businesses greatly underestimates the factual effects of noise in the inner city residential areas of Wedding, Reinickendorf, Steglitz or Tempelhof. The potential harming of Berlin's public health conditions, they argue, can therefore be downscaled with good reason. In the starting phase, the jet planes fabricate a significantly higher volume of noise, but due to their increased capacity to climb faster into the sky, the acoustic emissions fade away much quicker.[8]

However, neighboring areas did not at all benefit from the improvements of engine technology. Instead, a wider part of the bordering populated urban space is affected by air traffic. Therefore, the rising pulse of air traffic becomes a rhythmic feature of background noise in specific areas of Berlin city, so that the soundscape verges on a severe and continuous sonic pollution of urban areas. As mobility in the form of air travel surged during the following decades, flying to and from Berlin became more and more attractive. The time slots of jets landing or starting have narrowed, pushing together the temporal distances between no-noise phases. Air planes emerge as a relevant, indelible source of sound and noise, framed by the notion of an urban stressor (Glass and Singer 1972).

3.2 Competing Expertise on Noise Issues at Tempelhof Airport

Opened in October 1923 by the Berlin Airport Company, Tempelhof became a major international air traffic interchange point. To hear planes starting and landing was a constant reminder of the Berlin airlift of the years 1948/49 that shaped the political discourse concerning this space throughout the decades prior to reunification. US military use of Tempelhof for its air traffic guaranteed access to the West. As a territory of mobility in West Berlin, Tempelhof airport set diverse auditory markers (Corbin 1994) in the urban space. Spilling over with political and social references, the airport was transformed into a place of memory (Nora 1992) on the mental map of Cold War Berlin.

While discussing current traffic issues concerning Tempelhof Airport in January 1965, and grappling with the groundwork expertise of the Air Traffic Institute of the Technical University, the minutes of the House of Representatives' Traffic Commission meeting referred to a competing examination ordered by Senator Gerd Habenicht (Liberal Party), who was responsible for the

[8] Ibid., fol. 419.

Health Department between 1963 and 1967. Habenicht proposed to the Health Commission to focus on the impact of air traffic on the current and momentary conditions of public health in Berlin. The record- keeping, mid-level officer in the Senate's Building and Housing Administration, in charge of exchanging information on environmental issues with other branches, remarked in the minutes that the "health expertise" conducted an impact assessment by forecasting the conditions of noise emissions in the year 1972. The "traffic expertise", concentrating on the actual condition of air traffic, suggested that money needs to be invested in a noise reduction scheme, established and implemented for the benefit of the citizens. The expertise, of course, widely neglected the further implications of environmental noise pollution on the conditions of public health in these respective urban areas.

In August 1965 the experts from the Technical University presented a subsequent report on noise issues at Tempelhof Airport, especially with regard to the impact Boeing 727 jets have on the local soundscape. The physicists concentrated on the subaerial sound pressure metered at the level of Tempelhof's landing pathway and measured it in Perceived Noise Decibel (PndB). This unit primes the perceived annoyance along the complete course of time the sound pressure is metered.

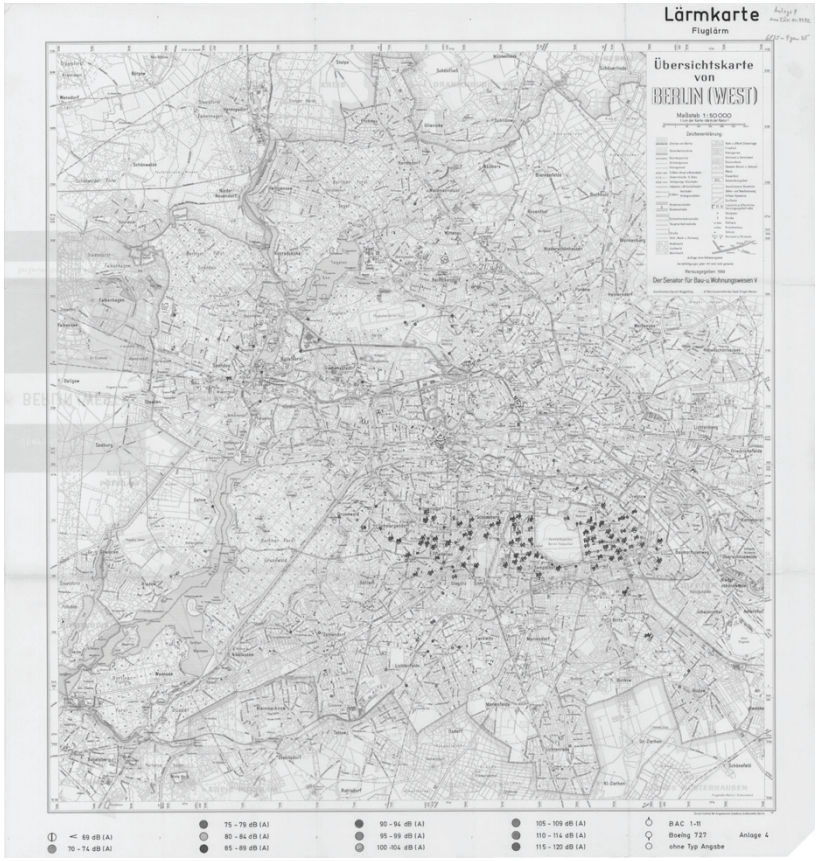
When transferring the value of PndB to a contemporary measure dB(A), thirteen units have to be subtracted. Therefore 125 PndB equals 112 dB (A), but bearing in mind that this figure expresses a relation whose sound progress in space depends on the distance to an emitting source within a 24- hour time frame. The Technical University researchers introduced three stages of airplane noise related annoyance: "strongly annoying" is defined at 125 PndB, a value rarely detected near populated areas. However, the report admits that jets starting on the northern lane to the east create an "unfavourable situation" in terms of heavy noise emissions estimated for certain adjacent areas like Oder- und Kienitzer Street.[9] It is a 1300 m walking distance to Altenbraker Street, referred to in the introductory drawing with the young boy covering his ears. The second level is the "inconvenient zone", marked by 102 to 112 dB (A). This zone covers populated areas. Diluting the categorization, the researchers state that the new Boeing 727 touches a similar or at least a slightly wider surface area of the city than the smaller Douglas DC 6-B planes,[10] claiming that the people living in the neighborhoods close to Tempelhof airport are already used to these models and therefore rather well adjusted to the level of constant noise

[9] LAB, B Rep. 002, Nr. 21958, Senator für Verkehr und Betriebe (II c D), Theuner, an Vorsitzenden des Ausschusses für Verkehr und Betriebe, Präsident des Abgeordnetenhauses über Regierender Bürgermeister, Senatskanzlei I S, Betr.: Untersuchungen der Technischen Universität Berlin über den voraussichtlichen Schallpegel des Flugzeugs Boeing 727 bei Starts und Landungen in Berlin-Tempelhof. Bezug: 18. Sitzung des Ausschusses für Verkehr und Betriebe am 28.01.1965, Berlin, 18.8.1965, fol. 4-6, fol. 5.

[10] Ibid., fol. 5.

emissions.[11] They did not go so far as to prospect external health hazards of local settlements and city quarters induced by air traffic, but indicated that this would be a territory of future research.

Image 3: Noise Map Daytime



Source: Technical Supervisory Association Berlin, 1969 – B 016 505/1.

The "traffic expertise", collated by the Technical University, was again challenged by a separate examination issued by the West Berlin Public Health

[11] See the inquiry posed by Rudolf Dümchen, a Tempelhof-based Christian Democratic Party delegate in the Berlin House of Representatives: LAB, B Rep. 002 Nr. 21958, CDU-Fraktion, Kleine Anfrage des Abgeordneten Dümchen, Betr.: Gesundheitsschädliche Lärmbelastung durch Düsenmaschinen auf dem Flughafen Tempelhof, Berlin 30.08.1966, fol. 22-3, <http:// www.cdu-pollex.de/kategorien/personen/rudolf-duemchen> (accessed July 15, 2013).

Administration in summer 1970.[12] The Berlin chapter of the Technical Supervisory Association (Technischer Überwachungsverein, TÜV) qualified 30 locations close to Tempelhof airport and an additional 50 spots in the approaching lanes, in order to measure – over an eight-week period in autumn 1969 – how planes striding across the city's airspace influence the acoustic conditions in neighborhoods. The Senate's Public Health branch requested the classification and assigning of noise emissions to specific types of airplanes used in Berlin-bound air traffic. Pinheads visualize the metering stations and the models detected.

TÜV engineer Bracht noted in the report that compiling peak levels was the key duty, in order to:

> properly overview the noise-related burdens the population has to endure and to generate further knowledge about the level of sound pressure produced by the two most common types of airplanes used in Berlin air traffic at that time.[13]

An American Boeing 727, a dual-trace One-Eleven from British Aircraft Corporation (BAC 1-11) and an aged Vickers Viscount model with a dart screw engine emit sounds to the environment depending on their weight and angle of elevation. Bracht denied a causal relation, pointing to the fact that even planes of the same type do not follow identical patterns of noise blasting. Regarding the actual amount of noise emissions, massive variables and insecurities need to be fully acknowledged.[14] The "health expertise" maps out a noise related nuisance in Schöneberg, Tempelhof and Neukölln that is significantly higher than the researchers of the Air Traffic Institute found in their second major study for the Traffic and Business Administration, prepared in spring 1970 (see Image 4).

A Boeing 727, for example, reaches a basic background noise value of 109 dB (A). This is comparable with the sound pressure of a police siren passing by at short distance (10 m), or similar to the sound level of the public audio equipment in a club venue.

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[12] LAB, B Rep. 016, Nr. 505/1, Technischer Überwachungsverein Berlin e.V., Technischer Bericht, Nr. 4972, Oberingenieur Dipl.-Ing. Bracht, Flug- und Baulärmmessungen in Berlin (West) im Auftrag des Senators für Arbeit, Gesundheit und Soziales, Berlin 20.07.1970, Anlage 4 zum TÜV, Nr. 4972, Lärmkarte Fluglärm.

[13] The following measuring instruments have been used by TÜV-engineer Bracht: a band length filter, Type PBO, BN 4920 and a sound level measure Type EZGN, BN 4503. See ibid., p. 5: „Um einen Überblick über die Lärmbelastung der Bevölkerung durch die absolute Höhe dieser Pegel zu erhalten und um eine Aussage über die Schallpegel der beiden im Berlin-Verkehr am stärksten eingesetzten Flugzeugtypen machen zu können."

[14] LAB, B Rep. 016, Nr. 505/1, TÜV Berlin, Technischer Bericht, Nr. 4972, 1970, p. 7.

Image 4: Zones of Noise Emissions, Tempelhof Eastbound, April 1970

Source: LAB, B Rep. 016, Nr. 505/2.

Table 1: Noise Emissions of Various Aircraft Models

Models	Background Noise dB (A)	Max Peak Level	Max (Rn-graph)
727	109 dB (A)	112 dB	111 dB (250 Hz)
BAC 1-11	116 dB (A)	115 dB	113 dB (500 Hz)
V. Viscount	100 dB (A)	100 dB	93 dB (2000 Hz)

Source: LAB, B Rep. 016, Nr. 505/1, Technischer Überwachungsverein Berlin e.V., Technischer Bericht, Nr. 4972, Oberingenieur Dipl.-Ing. Bracht, Flug- und Baulärmmessungen in Berlin (West) im Auftrag des Senators für Arbeit, Gesundheit und Soziales, Berlin 20.07.1970, 9).

The Boeing jet creates a similar sound level (111 dB), when the evaluation focuses on the curve of emitted sound. This Rn-graph constitutes the total sum of sound pressure in a predetermined time slot. It also integrates the different distances of the plane – as a sound source – to the detection point on the street level. The sound generated by the aircraft matches the urban surface in a spatial bend at a specific frequency. The row of houses function as a resonating body from which the aircraft noise echoes, forwarding the acoustic information, especially the different lower and higher frequencies of tones, to the metering points. Rather frequently, the primary and the reverberant sound merge to form a background noise that the devices are unable to analyze separately. Most probably, the population in the bordering Tempelhof, Kreuzberg, Neukölln, Schöneberg, Steglitz and the wider Wilmersdorf and Zehlendorf area would be unable to do so as well. Moreover, the temporal distribution of air movements

made by military machines, postal logistics or charter flights is fully excluded in this TÜV study. The civil aviation operating on Tempelhof's southern landing strip occupies a broader surface of the city's soundscape. Multiple flying corridors structure the space around airports. Due to the diverse flying corridors, the territory affected by aircraft noise expands.[15]

The "health expertise" reports that a larger district of the urban space is inflicted by this shape of background noise than the measuring stations could actually represent. In a spatio-temporal perspective, planes create a unique space of agency when occupying the airspace while striding across. These technological artifacts structure an urban environment along different coordinates. The technoscape (Appadurai 2000 [1996]) of mobility manipulates a city's soundscape without being properly contained by administrative policies. And as civil engineer Bracht concedes, there is no fully acclaimed procedure in place to evaluate and review acoustic emissions induced by aircraft in the Federal Republic of Germany.

At the turn of the 1970s, zoning areas of higher noise-related strains was an uncommon and contested procedure that had to be gradually traced out[16] in line with a more elaborated understanding of spatio-temporal implications of acoustic pollution on environment. Nowadays, Tempelhof is silenced (Thijs 2008), but the area remains a contested space. The administrative schemes regarding urban regeneration and newly launched housing schemes interfere with the spatio-temporal practices of citizens re-appropriating this territory. A space of mobility tends to transform into a place of leisure-time activities.

3.3 Refusing Civil Complaints against Airport Noise. A Line of Argumentation in West Berlin

Aiming at maximizing the benefit in terms of logistics, regional business and mobility, the Traffic and Business branch of West Berlin's Senate abstained from regulating airspace. Pointing to the concurrent military jurisdiction of the Allied Control Authority regarding Berlin airspace, the Traffic agency regularly denied citizen petitions concerning the background noise of the airport. The following example serves as a testimonial of how the administration dealt with complaints concerning planes' noise emissions in the easterly zone of Tegel's approaching paths. Writing to the ombudsman of the House of Representatives, a Berlin Wedding local, living in Themsestraße, requested a sustainable solu-

[15] Ibid., p. 9.

[16] LAB, B Rep. 016, Nr. 505/1, Vorausschätzung der Lärmschutzbereiche an den Flughäfen Berlin-Tegel und Berlin-Tempelhof unter besonderer Berücksichtigung des Verkehrsaufkommens und lärmmindernder An- und Abflugverfahren, Prof. Dr.-Ing., Manfred Fricke (Institut für Flugführung und Luftverkehr, TU Berlin). (ca.1971).

tion to limit the background noise produced by the airport. Dr. Urban, directly reporting to the Senator of Traffic and Business, Otto Theuner, remarked that:

> all issues concerning civil aviation are, pursuant with article III b of the Berlin Declaration of the Allied Powers 5.5.1955, matters of allied exception. For this reason, no proper German legislation exists in the area of air traffic which opposes orders and measures of the Allies. German jurisdiction regarding law of policing cannot be applied to Berlin airspace.[17]

Even when living in an officially designated housing area, following a major decision of the Berlin district court from January 1967, a Berlin citizen could not claim a right to require the implementation of traffic limitations. This is due to institutional reasons. As West Berlin's Senate did not yet exist, when civil aviation took off again in Tegel – situated in the French part of the occupied city – the institution could not be held responsible for the impact of air traffic which it did not regulate. West Berlin's executive force claimed no competence in monitoring and managing the airspace over Berlin.[18] Referring to the categorization in the Technical University's proposed report, Dr. Urban pointed out that the complaining citizen lived in the third level noise emission area classified as "massive". The sound pressure reaches up to 102 dB (A) (115 PndB), but this is comparable to "all major airports" in Europe and in America. West Berlin wanted to be assigned to this league of important economic hubs, and therefore the Senate's agency of Traffic and Business weakened the petition's main line of argument – the unbearable noise emissions – stating that "the zone 'insistently' lies beneath the zones 'annoying' und 'strongly annoying'."[19]

Other areas face a much higher level of sound pressure than the Themsestraße in the western district of Wedding. The administration at least admits that air traffic's impact on the environmental and housing conditions in Reinickendorf and Wedding can be understood as problematic and has been "subject to further examinations" by the Senate's administration. But the constant increase in aircraft mobility used by the Berlin inhabitants and their visitors makes it necessary to include Tegel airport in the air traffic-related considerations. As Tempelhof was already operating over the limit, establishing a second civil airport was an option for decision-makers to maintain free and unrestrict-

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[17] LAB, B Rep. 16, Nr. 510/1, [Senatsverwaltung für Bau- und Wohnungswesen] Senator für Wirtschaft, Abt. Verkehr (II E), Dr. Urban, an Herrn Vorsitzenden des Ausschusses für Eingaben und Beschwerden [über Präsident des Abgeordnetenhauses und Regierenden Bürgermeister von Berlin, Senatskanzlei I K3], Betr.: Eingabe des Herrn Manfred Fiehn, 1 Berlin 65, Themsestrasse 98, vom 20.04.1967, Berlin 05.05.1967, fol. 457-59, fol. 457: „Alle Angelegenheiten des zivilen Luftverkehrs sind gemäß III b der Berlin-Erklärung der alliierten Mächte vom 5.5.1955 Vorbehaltsangelegenheiten der Alliierten. Aus diesem Grunde gilt in allen Angelegenheiten des Luftverkehrs kein deutsches Recht, das mit Anordnungen und Maßnahmen der alliierten Mächte in Widerspruch steht. So kommt auf diesem Gebiet insbesondere auch kein deutsches Polizeirecht zur Anwendung."

[18] Ibid., fol. 457.

[19] Ibid., fol. 458: „Die Zone ‚eindringlich' liegt damit unter den Zonen ‚lästig' und ‚stark lästig'."

ed access to the city for everybody[20] (see Image 2: Zones of Noise Emission, Tegel Eastbound, 1971, LAB B Rep. 016, Nr 507/2).

In his line of argumentation, Dr. Urban asserts that the Federal Republic of Germany has not yet implemented an elaborated procedure to measure the limits of noise tolerance. He suggests comparing sound emissions fabricated by planes with the noise produced by cars and lorries. Urban's point of reference is road traffic regulation effective on the territory of the Federal Republic of Germany since July 1958. The permitted level of noise is directly linked to an assumed state of the art in the technological development at a particular time. The high profile administrator states that:

> following the current regulations issued by the Federal Ministry of Traffic, transporters and lorries over 2.5 tons may reach a noise peak level of 87 Phon; when registered before 1958, up to 90 Phon are allowed.[21]

Only at a certain frequency (1000 Hz) is the measure Phon identical with dB (A). Therefore, the limit values are not at all comparable. But in his response to the petition commission of the House of Representatives, Senate Director Urban concludes that the soundscape of road traffic and not aircraft noise is the real challenge for the Berlin boroughs. Urban, the Senate's traffic expert, downplays the role of Tegel, arguing that it does not pose a massive threat to the nearby populated areas and its inhabitants. For civil aviation operates only eighteen starts and landings on a daily basis, and mainly in western direction, and subsequently chooses different corridors. The temporal frequency of mobile vehicles serves as the set of reference, in a top-down perspective, to normalize environmental damages. It accounts for refusing citizen complaints regarding the negative effects on the individual sensorium.

> Aircraft noise only appears in sparse and short phases of time, because the airplanes are using more or less deviating routes when taking-off. Especially in the westbound flight corridors the level of sound pressure is significantly lower.[22]

[20] Ibid., fol. 458.

[21] Ibid., fol. 458: „Nach den Richtlinien des Bundesverkehrsministeriums dürfen Transporter und Lastkraftwagen über 2.5 Tonnen Gewicht bis zu 87 Phon entwickeln; wenn sie vor 1958 zugelassen worden sind, sogar 90 Phon."

[22] Ibid., fol. 459: „Flugzeuglärm tritt immer nur in wenigen und kurzen Zeitphasen auf" und da „die Flugzeuge meistens mehr oder weniger voneinander abweichende Richtungen einschlagen und insbesondere den westlichen Anflugsektor benutzen, der weniger lärmempfindlich ist."

4. Spatio-Temporal Practices in Airspace: The Politization of Public Hearing

Civil airspace is a constellation of rhythm. Spatio-temporal imprints in an urban soundscape can be read as a pattern of acoustic information and auditory experience. The mapping of air traffic noise in West Berlin provides opportunities to understand the netting of consistent interferences in urban space from an environmental perspective. Air planes are a dislocated source of nuisance. The mobility inscribed in the machines' usage of space provides a technological argument for not classifying certain inner-city areas as zones that are significantly under the impact of noise immissions.

But this fixation remains rather virtual, because the starting and landing corridors are broadly distributed over West Berlin's surface. The measuring of plane traffic-related annoyance[23] has established a wider approach to technical space-time-constellations that affect environmental conditions. The maps concentrate noise emissions to specific areas adjacent to the approaching paths. Urban space is framed as a function of length and width, not of amplitude. The noise maps visualize dispositions of how aircraft noise emissions hit housing areas as a temporarily condensed impact coming from different directions within the (air)space.

The key policy of the Senate's Administration of Traffic and Business presumes an equivalence of sound sources for road, railway and air traffic. This forms the rhetorical core determining the impact of movements in the airspace as endurable in terms of environmental effects on local communities. Inhabitants are produced as objects of air traffic schemes that are regulated by an intangible power of decision-making. Airports comprise various arrangements of mobility. Logistics, civil and military aviation, along with the techno-practices of starting and landing, regulate a city's soundscape. Machine rules dominate airspace. These rules can hardly be challenged by grassroots gatherings and initiatives in local communities.

Fighting for territory is a struggle at street level (Lindenberger 1995). Airspace is a volatile territory on which governmental dominance meets technological and economical preconditions. Civil agents have limited opportunities to participate in decision-making processes. Airspace is a scenery that fosters different practices of perceiving and negotiating urban space. Challenging the spatio-temporal practices of air traffic requires that the territory overhead be

[23] LAB, B Rep. 016, Nr. 505/1, Vorausschätzung der Lärmschutzbereiche an den Flughäfen Berlin-Tegel und Berlin-Tempelhof unter besonderer Berücksichtigung des Verkehrsaufkommens und lärmmindernder An- und Abflugverfahren, Prof. Dr.-Ing., Manfred Fricke (Institut für Flugführung und Luftverkehr, TU Berlin). (ca.1971) [Gutachten im Auftrag der Senatsverwaltung für Verkehr und Betriebe].

primed as a menace to public goods like health and environment. New social movements have learned to play out these aspects in order to generate public alertness prior to influencing decisions for and realizations of airport expansions. When the auditory experience of mobility encounters the regime of measuring and prospecting acoustic events, the gap between scientific determination and the cultural and social framing of public space widens. A city's soundscape is a temporal snapshot – a picture of a fluid, volatile and multisided process of negotiating the shape of an urban settlement. But the spatio-temporal practices of discontent within the new social movements emerging in the course of the 1970s and 1980s are subaerial, taking place at the level of streets, in city quarters, on spots and territories that can be seen, approached and occupied with others. From this bottom-up perspective, it is rather impossible to successfully challenge the logic of planning and administration that performs in liaison with the mandated sovereignty of the airspace.

Noise emissions of planes starting and landing confront this negotiated space with another set of reference aiming at the environmental implications of technological progression. In airspace, the chronotopos of the barrier (Bakhtin 1989, 198) meets Bakhtin's notion of encounter. The sound of mobility sets a limen that affects the given, oppressed and imagined patterns of political and social cohesion. Being a means of traffic, the moving airplane aggregates practices of technological mobility to fill out space over a city's roofs. Past and present struggles in the public domain concerning noise are fracturing and impede the institutionalization of a sustainable process of negotiation. Due to the logic of compiling maps, the acoustic contamination of social space is transformed via metering points into a set of visual data. Noise changes the sensorial register. It gets screened and colored.

Therefore, from a civil-society perspective, the interpretational disputes regarding spatio-temporal practices in airspace are much more difficult to conduct over a longer period of time. Charting airplane noise enables decision-makers to read and determine a specific, hegemonic soundscape. Visualized in charts, the zones of acoustic strains are shifting, especially when the planes stride across the urban settlements. Aircrafts are mobile sources of sound, of acoustic information, of emissions that transgress urban space with a specific pace and an approaching angles. Therefore, it has to be acknowledged that time slots shape the sensorial conditions of imagined, lived and regulated space. When airplanes change flying corridors, this spatio-temporal practice reorganizes the relations of sensing place and space along technological boundaries. Confronting and opposing those predeterminations are sources of conflict. They are inscribed into the space above street level. The spatio-temporal conditions of expanding contemporary Berlin-Schönefeld airport are not properly negotiated. The strategy of visualizing noise in maps is excluding the spatio-temporal contexts of individual acoustic events. This gets explicit in terms of

hearing the social effects of mobility and the impact annoyance evolves in an urban environment.

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