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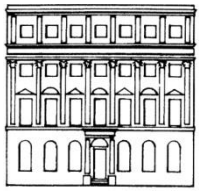

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WAR NOISES ON THE BATTLEFIELD: ON FIGHTING UNDERGROUND AND LEARNING TO LISTEN IN THE GREAT WAR

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'During long periods of history, the mode of human sense perception changes with humanity's entire mode of existence. The manner in which human sense perception is organized, the medium in which it is accomplished, is determined not only by nature but by historical circumstances as well', wrote Walter Benjamin in his essay 'The Work of Art in the Age of Mechanical Reproduction'.[1] Above all, the hierarchy of the senses itself is historically determined. The eye has dominated the discussion of perception since Antiquity, and thus sight ranks at the top of the hierarchy of senses.[2] But if we take the historical circumstances of perception into account, in this case, the First World War, we can see how, within a specific period of time, the ear challenges the eye for domination, and the ear gets ahead. With the beginning of trench warfare in the autumn of 1914, soldiers who disappeared into the earth in the 'underground war' and could see no further than the trench wall followed the motto: 'Those who cannot see must hear.' The roar of battle, the thundering of cannons, the whistling, whizzing, and crashing of shells, and the rattling of machine guns 'beleaguered the ear' in an unprecedented way.[3] According to the psychologist Paul Plaut, 'living through war has caused the sensory apparatus to function in new ways which, under different existential and psychological conditions in normal life,

Trans. Angela Davies (GHIL). This article is based on a paper delivered at the German Historical Institute London on 10 June 2014.

[1] Walter Benjamin, 'Das Kunstwerk im Zeitalter seiner technischen Reproduzierbarkeit', in id., *Gesammelte Schriften*, i. pt. 2 (Frankfurt am Main, 1974), 471–508, at 478.

[2] Herbert von Einem, 'Das Auge, der edelste Sinn', in id., *Goethe-Studien* (Munich, 1972), 11–24.

[3] Helmut Lethen, 'Knall an sich: Das Ohr als Einbruchsstelle des Traumas', in Inka Mülder-Bach (ed.), *Modernität und Trauma: Beiträge zum Zeitenbruch des Ersten Weltkriegs* (Vienna, 2000), 192–210, at 195.

would not have been so important'.[4] He describes a historical–psychological situation associated with a differentiation in the sense of hearing. This article will investigate the special significance of the sense of hearing between 1914 and 1934 from a cultural studies perspective that will juxtapose literary texts with sources from the history of mentalities and the history of science, drawing mainly on the experiences of the Western Front.

I.

> They do not hesitate for long, it is not like them to shilly-shally. They start. Down into the earth! It is a hole, a well, a shaft. As deep as houses. Ladders lead down. Then it goes forward, under the trenches and through the barbed wire entanglements. From there it branches left and right. The tunnel grows. A number of shafts are dug into the ground, the tunnels go out from them. Pickaxes and spades and pneumatic drills eat their way through earth and stone, creating a real mine. 'We set off a mine or two.' Who thinks anything of it? Nobody. Who knows this terrible job? They are not looking for ore underground here, they are looking for people. They want to take them from below, from above is not enough.[5]

'Der Krieg unter der Erde' is the title of an article which the war reporter and writer Bernhard Kellermann wrote for the *Berliner Tagblatt* in 1915. Kellermann had made a name for himself two years earlier as the author of a bestseller, *Der Tunnel*, a technological–utopian novel which, even before the war, transferred the 'battlefield of work' to subterranean passages, into the tunnel under the sea that was to connect Europe with America. Kellermann now left the realm of visibility behind in a work of non-fiction. He plunged into the opacity of the trenches and galleries, and wrote about underground mine warfare.

[4] Paul Plaut, 'Psychographie des Kriegers', *Zeitschrift für angewandte Psychologie*, 21 (1929), 1–123, at 33.
[5] Bernhard Kellermann, 'Der Krieg unter der Erde', in id., *Der Krieg im Westen* (Berlin, 1915), 159–65, at 160.

Eyes were useless in the dark, and even in the illuminated shaft it was hardly possible to see further than the next trench wall. All perception was concentrated on hearing. The sapper, who had to protect himself against the danger of an approaching enemy and assess how far away he was, set up a 'watchfulness front'.[6] To quote Kellermann again:

> He listens with his sensitive ears and says to himself, four metres, six metres. Is he left, right, up, down; his ears are part of it. The officer is lying asleep on his camp bed in a dugout when the phone goes off: it is four metres, I think he is above us. Good, says the officer, I'll be there first thing in the morning. Now it is time to act! It is a matter of working and scraping so that he over there does not notice that we have heard him. After all, it is likely that he has heard it too, with his sensitive ears. The big moment has arrived. It is a matter of minutes. The explosive charge is brought. Sandbags, mountains of sandbags are carried down into the tunnel. Sappers swarm like rats in the dark, but those out in front continue to work. They are only pretending, but it has to be done damned skilfully. The cutting and scraping, although it is only simulated, cannot differ from real work in any way because he over there in the tunnel is as cunning as a fox. He will laugh into his beard and say to himself: they are pretending now, but I will set my charge off five minutes earlier. Then farewell sapper, officer, and men![7]

Strategies of concealment emerged during the First World War, 'techniques for disappearing',[8] designed to withdraw one's forces from the enemy's sight. Troop movements, munition and artillery transports were rescheduled from day to night time, and soldiers and their positions fully camouflaged. But, above all, they went underground. A type of warfare that began in 1914 with quickly dug foxholes and ended with 'galleries dug by miners' was soon popularly

[6] E. Schiche, 'Ueber Todesahnungen und ihre Wirkung', *Zeitschrift für angewandte Psychologie*, 21 (1920), 173–8, at 176.

[7] Kellermann, 'Der Krieg unter der Erde', 162.

[8] Stefan Kaufmann, *Kommunikationstechnik und Kriegsführung 1815–1945*: *Stufen telemedialer Rüstung* (Munich, 1996), 178.

known as 'trench warfare'.[9] In the autumn of the first year of the war, the first continuous trenches deep enough for soldiers to stand upright in and shoot from were dug, and covered trenches with seating and dugouts for sleeping in were constructed. By the middle of the following year, a typical section of the Western Front on the German side consisted of a trench, with a second one twenty-five to sixty metres behind it, and a third at about the same distance behind that. The small distance between the trenches was intended to make it easier to move up reinforcements. But it soon became apparent that the range and enormous explosive power of projectiles meant that all three trenches could be destroyed with one hit. The Germans therefore began to build trenches at much greater distances from each other. And linear trenches were developed into deep complexes of trenches. As more and more mined dugouts were constructed, trench warfare soon came to resemble fighting in fortresses.[10]

The use of mines turned the earth into a listening space. 'Sight is a superfluous sense, your whole being is concentrated in the faculty of hearing; you close your eyes to hear the better', noted one of the miners.[11] Yet there are limits to human hearing. Where every subterranean vibration was a question of survival, where everything depended on the softest, most distant stirring, listening posts must have considered their sense of hearing deficient. Amplifiers, electrical listening instruments, and microphone systems were therefore in demand. Max Praßler, a businessman from Hamburg, sent some samples of his patented sound locators into the field. They allowed knocking signals to be picked up, loud and clear, from a distance of more than 1,000 metres from the source. His device proved its worth and more were ordered. 'General Command considers the apparatus suitable for listening in tunnels and mine galleries as well as anywhere where firm ground, such as stone, clay, or chalk, will conduct sound', we read in a report by the Guards Corps General Command.[12]

[9] Ibid.

[10] Major ret. Blum-Delorme, 'Vom Schützenloch zum Betonbunker: Zur Erinnerung an den Beginn des Stellungskrieges vor 25 Jahren', *Militärwochenblatt*, 24 (1939), 1212–14, at 1213.

[11] Jean des Vignes Rouge, 'The War Underground', in Eugene Löhrke (ed.), *Armageddon: The World War in Literature* (New York, 1930), 397–401, at 398.

[12] Max Praßler, 'Abhorch-Vorrichtung für Kriegszwecke', Bayerisches Hauptstaatsarchiv/Kriegsarchiv: Stabsoffizier der Pioniere (Stopi), 2/72 (1915).

The acoustician Erich Waetzmann developed the 'geophone', based on the principle of the stethoscope, to 'capture the sound of underground mining in wartime'. It was equipped with a microphone diaphragm so that sounds could be recorded electro-acoustically.[13] The ability to transmit sound meant that listening posts in the underground galleries could be replaced with listening devices, saving sappers and making it possible to reduce the unnecessary presence of soldiers in danger zones. Underground explosions could happen at any time; the enemy could anticipate and pre-empt one's own destructive intentions. Again and again, accounts by sappers mention being prepared for an explosion at any time, and describe the strain on their nerves and the over-exertion of their hearing. Everything was both improvised and carefully calculated because it was important to be prepared for the worst at any moment.

II.

While the eye can look at something separate from and external to itself, hearing cannot withdraw in this way. Unlike the eye, the ear cannot turn away or close, unless it is deliberately plugged, as in the case of Odysseus. Nineteenth-century ear specialists defined the eardrum as a 'protective device for the ear'. As the eyelid protects the eye from light that is too bright, they argued, the eardrum protects the hearing organ from dangerously loud noises. Seeing acoustic perception in analogy to optical perception, they regarded the eardrum not primarily as a membrane for transmitting acoustic vibrations, but as a protective membrane between the outer and middle ear.[14] The ear, however, is at the mercy of the noise that penetrates it; it has no lid that can protect it from outside. Hearing thus has a very different structure of attention from seeing. 'It is not focused, but scattered; it does not act, but listens in order to absorb the sounds around it; it does not touch the surface of something, but enters into what is heard in order to interpret it.' Thus 'the dichotomy of observation' is not

[13] Erich Waetzmann, 'Zur Ausbreitung elastischer Wellen in der Erdoberfläche', *Naturwissenschaften*, 15/16 (6 May 1927), 401.

[14] Oskar Wolf, 'Die Schutzapparate des Ohres', in id., *Sprache und Ohr: Akustisch-Physiologische und Pathologische Studien* (Brunswick, 1871), 233 ff.

one of its characteristics.[15] The ear does not work at a distance. The hearing individual is always already involved in the action.

'The Ear in the War' is the title of a contribution, dating from 1916, to the trade journal *Artillerie- und Geniewesen*, in which the sense of hearing is the protagonist. This title is symptomatic of a time when living through war had caused the sensory apparatus to function in new ways. Where machine guns forced soldiers into the trenches, the war became an anonymous blanket of sound made up of weapons and projectiles that required combatants to 'practise listening' if they wanted to assess the level of danger threatening them.[16] The battle of *matériel* multiplied many times what so far had been experienced only as the traffic and industrial noise of a modern city. Claiming the 'right to silence', anti-noise societies and noise protection associations had been founded at the beginning of the twentieth century to curb the general attack on hearing. On the battlefield, however, noise was no longer a mere by-product of progress and industrialization. It was not just a backdrop to war, but a method in itself. 'Drumfire' was the name given to the tactic used to prepare infantry attacks, when artillery companies directed their fire, from the smallest calibre to the heaviest guns, in a heavy barrage at the enemy's defensive lines and positions. The Germans 'drummed' for three and a half days during the offensive at Verdun in the spring of 1916. Barely six months later, preparing their summer offensive, British forces discharged more than 1.7 million shells in eight days, and more than 4.3 million in Flanders in the following year.[17]

The destruction was deafening. 'Drumming' first of all put a strain on the soldiers' eardrums. It was impossible to exaggerate the terrifying impact of the shelling, wrote Philip Gibbs, a British war correspondent in 1914. The noise, he went on, was more depressing than the prospect of imminent death.[18] The effects of the noise were

[15] Dieter Mersch, 'Aisthetik und Responsivität: Zum Verhältnis von medialer und amedialer Wahrnehmung', in Erika Fischer-Lichte (ed.), *Wahrnehmung und Medialität* (Tübingen, 2001), 273–99, at 289.

[16] Christoph Hoffmann, *Der Dichter am Apparat: Medientechnik, Experimentalpsychologie und Texte Robert Musils 1899–1942* (Munich, 1997), 114.

[17] Kaufmann, *Kommunikationstechnik und Kriegsführung*, 172.

[18] Philip Gibbs, 'Im Granatfeuer', *Frankfurter Zeitung und Handelsblatt*, 27 Nov. 1914, no. 329.

appalling. But there were some who got used to it, and were able to sleep through 'drumfire'. As the artillery accumulated and enormous amounts of ammunition were expended, casualties also rose rapidly.[19] Hospitals diagnosed hearing impairments, organic damage such as perforations of the eardrum, middle ear infections, and trauma to the ossicles. Patients were treated for 'hysterical deafness' and shell-shock with its heightened sensitivity to noise. After the noise, the soldiers' ears were beleaguered by medicine.

With the intermingling noises in their ears, soldiers had to learn to discriminate between various sounds and to take note of special auditory events amid the general noise. After just two weeks in the field, some were able to identify the projectiles they heard in the air with absolute certainty. Skilful listeners, such as the violinist Fritz Kreisler, were invaluable to the unit. While serving on the Eastern Front, Kreisler was able to identify, from the sound made by an approaching shell, exactly where it would reach the highest point in the curve of its flight. A few days after he had told his officer of this, he was instructed to mark these points on a map, which made it possible to calculate the distance and position of the Russian batteries. Kreisler's work was not in vain: 'It was later on reported to me that I had succeeded in giving to our batteries the almost exact range of Russian guns. I have gone into this matter at some length, because it is the only instance where my musical ear was of value during my service', he noted in his memoirs, which were published in America in 1915.[20]

The theoretical foundations of phonometrics had been known in Germany before 1914, but they were not tested in practice until the war. In May 1915 the experimental psychologists Erich Moritz von Hornbostel and Max Wertheimer put the 'directional hearing device' they had invented at the service of the War Ministry. It was first test-

[19] Walter Friedlaender, 'Die Schädigungen des Gehörorgans durch Schusswirkung', *Archiv für Ohren-, Nasen- und Kehlkopfkunde*, 2/3 (1915), 158–209.

[20] Fritz Kreisler, *Four Weeks in the Trenches: The War Story of a Violinist* (Boston, 1915), 28. After his honourable discharge from the Austrian army, Kreisler went to the USA which, as is well known, had not entered the war at the end of 1914. He donated his fees to the wounded and Austrian war orphans. After the USA entered the war, Kreisler suffered so much abuse for this that he had to cancel all performances. Harald Eggebrecht, *Große Geiger: Kreisler, Heifetz, Oistrach, Mutter, Hahn & Co.* (Munich, 2000), 146.

ed under battle conditions in November, and became part of the regular kit of sound-ranging parties in the following year.[21] Equivalent devices in France were known as 'Sagnac', 'Perrin', or 'Baillaud'; in Britain, a device with conical trumpets was developed.[22] In his war memoir, Martin Bochow, one of the first soldiers to be assigned to the newly formed sound-ranging parties, wrote: 'In the midst of a war of shelling and machine guns, hand grenades and mortars, we, as a technical special force, equipped with the most modern observational devices, sat and worked with the precision of a modern engineer or physicist in the laboratory . . . except that the object of our observation was not some material or other, but the enemy batteries.'[23]

III.

There are many contemporary sources describing new auditory experiences in the trenches and in mountain warfare, but also in the 'war underground', where it was not brutally noisy, but silent. What was required here in order to be aware of an imminent threat was to listen, not in a noisy environment, but in a quiet one. The phenomenon of listening in silence has probably never been described better than by Franz Kafka in his story 'Der Bau', which was written in the winter of 1923–4. Kafka himself never took part in the underground war, but 'absolutely wanted to be a soldier'.[24] He was first mustered in June 1915 and had already bought some strong boots in case he was drafted. He was found fit to serve in the *Landsturm*, the reserve, and was assigned to the army. But in the same month, the workers' accident insurance company for which he worked filed an application for, its vice-secretary, Kafka, to be exempted from military serv-

[21] Christoph Hoffmann, 'Wissenschaft und Militär: Das Berliner Psychologische Institut und der I. Weltkrieg', *Psychologie und Geschichte*, 5 (1994), 261–85, at 268.

[22] For how the various listening devices worked, and how they were developed further after the war, see Heinrich Hunke, *Luftgefahr und Luftschutz* (Berlin, 1935), 85–98.

[23] Martin Bochow, *Schallmesstrupp 57: Vom Krieg der Stoppuhren gegen Mörser und Haubitzen* (Stuttgart, 1933), 51, 61.

[24] Franz Kafka, *Briefe an Felice und andere Korrespondenz aus der Verlobungszeit*, ed. Erich Heller and Jürgen Born (Frankfurt am Main, 1967), 511.

ice as he was considered indispensable and irreplaceable in the office.[25] Another call-up on 21 June 1916 had the same result. By the time Kafka's exemption was lifted at the end of 1917 and he had to make himself available again, he had been diagnosed with consumption and knew that he would not be considered for service on health grounds.

Kafka therefore had no personal experience of trench warfare. But he had a copy of Bernhard Kellermann's 'Der Krieg unter der Erde' in his library. And he might have visited a reconstruction of a trench, which had been installed outside the city for the edification of the people of Prague. It attracted thousands of visitors. On 6 November 1915 Kafka noted in his diary that he had seen 'the ant-like movement of people in front of the trench and in it'. A mole-like creature that lives underground narrates 'Der Bau'. It has entrenched itself in subterranean passages and has constructed an earth fortress to protect itself from the 'external enemy' and an enemy, never seen, 'in the interior of the earth'.[26] Every hundred metres the passages open into small round spaces where the animal can curl up comfortably, rest, and sleep. The best thing about the burrow, according to the animal, is its silence. But this does not last long. It is disturbed when a 'barely audible hissing' wakes it from sleep. Listening at the walls, the animal moves through the passages and digs test pits to establish where the noise is coming from so that it can eliminate it. But the noise never gets closer, 'it always sounds unchanged, thin, coming at regular intervals, sometimes a hissing, once more like whistling'. The origin of the noise begins to take shape in the mind of the listener. Soon the 'mole' is speaking of the 'hisser' and 'digger', of an unknown 'great beast' that is working furiously; an enemy who is closing in on the burrow, drawing ever narrowing circles. The noise seems to get louder. In the burrow, 'every moment shakes the listener'. His own passages are indistinguishable from the possible passages of the Other. But has the hissing beast even heard the other one, the 'mole' who 'drags his ear along the walls'? Does it have 'any sort of intelligence' about him? 'If it had heard me, I would have noticed

[25] Franz Kafka, *Amtliche Schriften*, ed. Klaus Hermsdorf (Berlin, 1984), 402.
[26] Franz Kafka, 'Der Bau', in id. *Kritische Ausgabe: Schriften – Tagebücher – Briefe*, ed. Gerhard Neuman et al., *Nachgelassene Schriften und Fragmente II* (Frankfurt am Main, 1992), 576–632.

something, it would have had to stop working and listen from time to time, but everything remained unchanged, that'—Kafka's unfinished story breaks off in the middle of a sentence.

The similarities, first pointed out by the cultural scholar Wolf Kittler, between Kafka's 'Bau' and Bernhard Kellermann's reportage 'Krieg unter der Erde', quoted at the beginning, are astonishing.[27] Both start by soberly describing technicalities, but switch to a dramatic event at the first mention of the noise or the enemy. Both are narratives about listening in silence, as the sapper in 'Krieg unter der Erde' also 'listens with his sensitive ears', and 'hears the enemy scraping and scratching'. 'His ears are part of it', says Kellermann, who describes the listening training on the front lines that forms part of mine warfare and is also mentioned by the animal in the burrow when it is trying to localize the noise with its 'ear sharpened by practice'.[28] Kafka's story 'Besuch im Bergwerk', dating from 1919, could also be mentioned in this context. In it, one of the engineers who, on the instructions of the directorate, are surveying a test tunnel 'holds an apparatus to his ear and listens'.

By picking up on the perceptions that had become relevant in the war, developing them further and remodelling them; by placing the most diverse fields of discourse associated with acoustic perception in relation to each other, Kafka took part in the contemporary re-evaluation of the sense of hearing. Sitting at his desk, he wrote his text at the same time as acousticians, in their sound-proofed laboratories, were trying out 'listening in silence' and exploring a phenomenon that they called 'subjective noise'. What they meant by this was 'noises that originate in the body itself'. During the war and after it, this condition was treated in connection with 'neurasthenia' and 'war neuroses', that is, as a pathological phenomenon. In field hospitals, patients who had been close to exploding grenades complained of noises and ringing in the ears; their condition was known as 'hysterical deafness', and they often suffered less from hearing loss than insomnia and subjective noise.[29] While examining these patients,

[27] Wolf Kittler, 'Grabenkrieg—Nervenkrieg—Medienkrieg: Franz Kafka und der 1. Weltkrieg', in Jochen Hörisch and Michael Wetzel (eds.), *Armaturen der Sinne: Literarische und technische Medien 1870–1920* (Munich, 1990), 289–309.

[28] Kellermann, 'Der Krieg unter der Erde', 161–2.

[29] Karrenstein, 'Über Schädigungen des Gehörorgans im Minenkrieg', in Carl Adolf Passow and Karl Ludolf Schaefer (eds.), *Beiträge zur Anatomie,*

doctors noted down the onomatopoeic descriptions they provided, and classified them as: 'droning, gurgling, growling, humming, whirring, roaring, hissing, rustling, murmuring, bubbling, thundering, rumbling, thumping, rolling, booming, clicking, creaking, squeaking, chirping, hissing, twittering, ticking.'[30] Definable musical notes or sequences (the ringing of bells, music) were also described. Their intensity varied greatly. While the weaker sounds were overshadowed by noise from outside and could only be perceived in silence, others were so intense that they drowned out everyday noises.

But rustling, thumping, and buzzing in the ears are not necessarily pathological. They can also be attributed to natural vibrations in individual body parts, or to the beating of the heart that can be heard in silence. The acoustician Erich Waetzmann from Breslau, inventor of the geophone, called these non-pathological, subjective manifestations 'body noise'. He attempted to make it audible, and thus to objectify it, in the same way that he treated 'earth noise' when listening to enemy sounds during the war underground: 'The problem of recording any noise from the ground or the human body is, in principle, the same', he wrote in 1927 in an article summing up the geophone, and suggested that more attention should be paid to these connections.[31] In 1914 Waetzmann enlisted as a private and was soon employed as a chief engineer by the head of Field Telegraphy. In 1917 he was transferred to the Artillery Commission in Berlin and headed the military experimental station in Friedrichshagen. 'In France and Russia', we read in his obituary, commenting on the early years of the war, 'Erich Waetzmann checked the listening stations in front of the front lines himself, going out on night patrols, monitoring the installation and operation of his geophones on the sections of the front vulnerable to undermining.'[32] Those areas of the front where sappers, in

Physiologie, Pathologie und Therapie des Ohres, der Nase und des Halses, 11 vols. (Berlin), viii. (1916), 271–83, at 278; W. Kümmel, 'Entstehung, Erkennung, Behandlung und Beurteilung seelisch verursachter Hörstörungen bei Soldaten', ibid. xi. (1919), 1–50, at 34.

[30] K. Grünberg, 'Die subjektiven Gehörsempfindungen', in Alfred Denker (ed.), *Handbuch der Hals-Nasen-Ohrenheilkunde*, vi. (Berlin 1926), 890.

[31] Waetzmann, 'Zur Ausbreitung elastischer Wellen', 33.

[32] Paul Hahn, 'Zum Andenken an Erich Waetzmann', *Zeitschrift für den physikalischen und chemischen Unterricht*, 53/3 (1940), 88–91, at 89.

their listening passages, could not distinguish between objective and subjective noise provided the laboratory in which Waetzmann developed his geophone. For him as for Kafka's animal, the same questions arose. They were difficult because they could not easily be answered: was he hearing the enemy dig, or pretending to dig? Was he listening to his own steps echoing in the neighbouring tunnel? Could he hear an explosive charge being prepared to be set off? Or was it quiet? Was it just the blood pulsating in his own arteries and his pulse throbbing at regular intervals? Could the soldier and the animal hear the Other, or just themselves?

In the dangerous areas right at the front, listening to what was happening underground was frequently associated with the 'overexcited imaginations' and 'hallucinations' that were among the features of panic among soldiers.[33] This can be attributed to the lack of detachment characteristic of auditory perception: what is heard always depends on the hearer.

IV.

At the beginning of the twentieth century, the ear lost its innocence. Adapted to terrain where the eye could barely perceive the threat, it was no longer a passive receptor, but had become an organ with responsibility, one that actively listened rather than merely heard. In 1934 the acoustician Erich Waetzmann wrote a small book, *Schule des Horchens*, that was both manifesto and training manual. By training the hearing it aimed 'to exercise and improve the skill of hearing to such an extent that we will be able to entrust ourselves entirely to the leadership (*Führung*) of the ear when the eye fails'.[34] In future, he argued, there would be more and more cases 'in which the ear will be the sole guardian over our security'. Thus the value of training an ability to hear and listen could not be overestimated. Waetzmann was exploring the technical possibilities of perceptions for helping us to survive at a time of new dangers. Where the eye could no longer guarantee safety, the traditional sovereignty of the seeing subject was over. This was the lesson to be learned from the battlefield situation

[33] Plaut, 'Psychographie des Kriegers', 38.

[34] Erich Waetzmann, *Schule des Horchens* (Leipzig, 1934), 3.

of trench warfare, where dangers were no longer visible. The dangers had changed. They were invisible. Waetzmann wanted to give perceiving individuals back the security they had lost. This could only be achieved by training the capacity to listen.

In *Schule des Horchens* he prescribed eight listening exercises, ranked in order of difficulty. The acoustic signals (ranging from simple hand-clapping and banging pencils together to the firing of a pop gun) were to be as loud as possible, and distracting background noise to be avoided. The trainee listener only gradually learned to pick out each individual noise from many different but simultaneous noises, and identify the direction from which it was coming. For Waetzmann, this 'directional listening' was the centrepiece of the training. In the first exercise, the trainer was to position himself about a metre behind the trainee and, fixing his gaze on the back of the trainee's head, send acoustic signals. The listener was to keep his head motionless, while the trainer changed the position from which he sent the sounds, clapping or knocking behind the trainee, then moving to the right, even further right, then to the left, then going back to the centre, and so on. In each case the trainee had to indicate the direction from which he heard the sound coming.[35] Trainees had achieved the highest stage of auditory training when they were capable of locating moving targets. This exercise, Waetzmann suggested, could be carried out in a darkened room with a mouse moving around it. Once the trainee had established the direction from which the sound came, he was to illuminate the spot with a torch. Experienced listeners became so good at this 'that the mouse soon becomes nervous and anxious and either stays quite still or, it seems, prefers to leave the room'.[36]

Waetzmann had his trainees playing games such as 'Blinde Kuh' or 'Mäuschen, sag mal piep'. But these children's games were nothing less than war games. The skills they taught were aiming at, illuminating, and hitting targets and making people nervous. Where war was played, the world war was inevitably present. Although Waetzmann did not make this explicit, all his examples pointed to this conclusion. It is striking, however, that here he suddenly ignored all the uncertainties of auditory perception, all the difficulties of objectiviz-

[35] Ibid. 39.
[36] Ibid. 49.

ing subjective sounds, which he had put to the test years earlier in his experiments on 'listening in silence'. In *Schule des Horchens* he advocated automatic listening, a skill to be acquired by training, that kicked in like a reflex action as soon as a noise was heard, obviating any reflection on hearing itself.

In his investigation of 'listening in silence', Waetzmann had assumed that listeners were involved in what they were hearing, that they perceived not only auditory sensations from outside but also subjective noises like their own pulses or breathing. By registering natural vibrations in his experiments with an oscillograph, he attempted to explore the boundary in a way that, in a different place, the animal in Kafka's 'Bau' was incapable of doing. It could not say whether it was hearing itself or the threatening Other. This aspect of participation, which became a dilemma for Kafka and is peculiar to auditory perception, no longer had any part to play in *Schule des Horchens*. Rather, the assumption was that for the perceiving individual, there was an audible world which just had to be listened to.

In *Schule des Horchens*, Waetzmann wrote that the aim of his slender handbook was 'to exercise and improve the skill of hearing to such an extent that we will be able to entrust ourselves entirely to the leadership of the ear (*Führung des Ohres*)'.[37] In Germany in 1934, this had to be understood politically. Given the radio loudspeakers of the Third Reich, such words were ambiguous. Listeners not only entrusted themselves to the leadership of the ear, but allowed themselves to be led by the Führer. Where the dilemma of participation, which is implicit in hearing, is not allowed to come into play, and where there is no question about whether I am hearing the Other or myself, the ear is easily made subservient. It becomes deaf to reflection on hearing itself.

The First World War was a war that affected all the senses. At times, when approaching danger could only be perceived acoustically and the sense of hearing, which, unlike sight, knew neither distance nor protection, was challenged, the perception of danger became a dilemma: was the soldier hearing the Other or himself? At moments of panic he could not tell. How was he to train for this? But as the significance of the sense of hearing was increasingly understood, exercises were undertaken, like the ones prescribed by Waetz-

[37] Ibid. 49.

mann in his *Schule des Horchens*. Even if the sense of hearing cannot be 'steeled', Waetzmann wanted to make it serviceable to both military and civilian life, and to increase its efficiency so that those living under threat 'can, calmly and confidently, place their trust in the leadership of the ear, when the eye fails'. In his drills he tried to eliminate the ambivalence inherent in auditory perception which he had analysed so precisely in past years. And in Germany in 1934 this was not good news.

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