Material remains of telecommunication at the forced labour camp in Kirchbichl (Tyrol, Austria)

Summary

The forced labour camp at Kirchbichl (Tyrol, Austria) was run during the National Socialist regime largely for the construction of a hydropower plant on the river Inn as part of a planned enlargement of the hydropower industry in the Alps. Archaeological excavations at this site brought up a broad spectrum of materiality from different spheres of activity. In this case, the focus lies on a type of objects which has been only rarely discussed so far. Material relics of telecommunication raise questions concerning the connection of the camp administration to a communication network, which made an immediate response possible, as regards the progress of the hydropower plant construction site, but also in terms of the recruiting and management of forced labourers.

The aim of this paper is the contextualisation of archaeological evidence in applying historical archaeological methods by addressing other available sources, such as written reports, plan drawings or photographs. The scientific value of a wide-ranging approach will be stressed, while focussing on the examination and identification of objects, their use, producers and technological background.

Zusammenfassung


Introduction

As various excavations have shown, examinations of sites from the younger past in particular not only bring up a large quantity but also a huge diversity of archaeological remains, sometimes including parts of various kinds of electrical devices (Theune 2015, 37; Müller 2010; Klimesch / Rachbauer 2007). A type of material that has hardly received any attention in scientific research so far are telecommunications objects. These are mostly artefacts from a standardised, industrial mass production and many identically constructed items have been preserved under better physical conditions, but a comprehensive examination of this group of objects is worth undertaking for the following reasons.

Firstly, telecommunication is an important part of transporting information over significant distances in a minimum of time and provides the opportunity not only of giving commands or consulting other authorities, but also of receiving an immediate response. Forced labour and concentration camps in Germany and occupied territories were on the one hand part of a system of enslavement and extermination, but on the other hand also part of a big administrative organisation, which in addition to written correspondence relied on wired telecommunication and was also connected to the public telecommunications network. Telephone numbers of larger camps, such as Mauthausen for example were even listed in public telephone books (Reichstelefonbuch 1940, 102). The possibility for high-ranking commanders to have personal conversations with subordinates in remote locations and its influence on the obedience to given orders has already been stressed in connection with examinations of the development of Germany’s telephone system (Thomas 1995, 294).

Secondly, mass produced devices that had to fit industrial standards often show a series of marks, logos and identification numbers which make it possible to gain further information from additional written sources. This aspect makes them a good example of the benefits of including available sources of various kinds. Thus, this examination will not only take a closer look at a group of items hitherto neglected by archaeologists, but also prove the scientific value of a wide-ranging approach.

Sources

Even if only fragments are preserved, contemporaneous journals, operating manuals, catalogues and data sheets make it possible to specify the original appearance, type and function of objects and link them to producers, owners and users. For telecommunication objects in particular, publications of the German national mail and telephone company (Deutsche Reichspost) provide an overview of the types of telephones for civil use. Telecommunications equipment used by the military is registered in lists like the Gerätliste D97+. Operating manuals designed for the education of soldiers provide pictures and accurate descriptions of different devices.

Identically constructed pieces, held as part of collections either by museums or individual collectors, can serve as objects of comparison and have the advantage that features that might not occur in other sources can be examined in detail. Quality marks can often be decoded by examining contemporaneous technical journals, where for example industry standards were published. Moreover, these contain further information about the materials used and their characteristics, advantages and applications. If items can be linked to their producers via an inscription or a company logo, one can probably gain more information from an archive held by this enterprise. However, since companies in Germany and Austria are not legally obliged to permit admission to or even run an archive, these are often difficult to access (see also Kroker 2005, 55).
Historical Background of the forced labour camp in Kirchbichl

Large amounts of electricity from Austrian hydropower plants in Tyrol and Vorarlberg had already been sold to the German Reich before the occupation of Austria in 1938 to ensure the energy supply of the growing German industry and armaments production. Following the so-called Anschluss in March 1938 one of the first goals in the developmental program for Austria (Aufbauprogramm für Österreich), the enlargement of the electricity industry, was to be achieved mainly by building several hydropower plants, especially in the mountainous regions of western Austria (Freund 2014, 23), and through more power supply lines to improve the connection between western Austria and Germany (Schreiber 1994, 68). The company Alpenlektrownwerk AG (AEW) was founded in April 1938 to coordinate these programs and thereafter acquired assets of local companies. As early as August 1938 the AEW was in possession of a majority of the shares of the Tyrolean energy supplier Tiroler Wasser Kraftwerke AG (TIWAG) (Freund 2014, 3–4). Next to the village Kirchbichl in Tyrol, approximately 80 kilometres south-east of Munich, a stretch of the river Inn, which arises from the Swiss Alps and leads to the Danube, was chosen as a site for a new electric power plant based on plans that had existed since 1921 (Schreiber 1994, 76). Construction work began in autumn 1938 and between April and September 1941 all of the three Kaplan turbines were brought into service (Bundesministerium für Verkehr und verstaatlichte Betriebe 1953, 11–16). Forced labourers, who had to work at the construction site, were imprisoned in a nearby camp that was called the Polenlager.

Although the hydropower plant was already in operation, building works such as the installation of river bank reinforcements and drainage systems continued (TLA, GB-Bau Zl. 11–19/11). In 1942 and 1943 the construction site was declared strategically important (kriegswichtig) by the Ministry of Arms and Ammunition (Reichsministerium für Bewaffnung und Munition). The Tiroler Wasser Kraftwerke AG (TIWAG) was therefore permitted to finish the project and continued to receive building materials despite the ongoing war (TLA, GB-Bau Zl. 11–19/03 and TLA, GB-Bau Zl. 11–19/11). According to a plan drawn in 1939 the space on the right bank of the power station’s bypass channel was first used to store construction material and to house infrastructure related to the building site, such as a concrete mixing facility (TIWAG 1939). Later another forced labour camp, the Lager am Wehr, was erected here to replace the Polenlager. Barracks of this forced labour camp are visible on plan drawings from the years 1943 (TLA, GB-Bau Zl. 10–20/4) and 1944 (TIWAG 1944), which show two different enlargement stages. Following the plan dated to April 1944, there were eight buildings including two dwelling barracks, a barrack for administrative purposes and storage, a workshop, a service building, a building for food storage, a shed and a lavatory. In a register of workers deployed at the construction site of the power plant in Kirchbichl, dated July 1944, 33 persons are listed, including 14 prisoners of war and 13 forced labourers from Poland (listed under the term Ostarbeiter) (TLA, GB-Bau Zl. 10–09).

After 1945 the existing buildings were used as accommodation facilities by employees of the TIWAG. Aerial photographs taken between 1952 and 1958 still show all of the buildings marked in the plan of 1944, except for the administration and storage barrack in the south-western part of the area. On the available series of photographs taken after 1958, one can see that the remaining barracks were torn down in at least two phases between 1958 and 1964 and between 1968 and 1973 (Tiroler Laser- und Luftbildatlas 1952, 1953, 1958, 1964, 1973 and 1983). A tennis court, that was afterwards erected on part of the area, still existed when it was decided to renovate and enlarge the still operating power plant at Kirchbichl. Due to the Environmental Impact Assessment (EIA) it became clear that the area of the former forced labour camp Lager am Wehr would also be affected by the new project, leading to archaeological excavations on the site in 2013 and 2015 by the Austrian company ARDIS, prior to the construction works. This investigation uncovered a wide variety of objects related to the building site, the forced labour camp
and the post-war use of the area, including construction material, tools, food packaging, cosmetics and pharmaceutical products, cutlery and tableware, military equipment and shell casings, as well as parts of electric instruments and devices. Several shafts, that had been a primary part of the camp’s drainage system, had been filled up with debris. Objects which have been part of a telecommunications system were dumped in one of the shafts (Schacht 1), together with other objects. The sequence of stratigraphic units in Schacht 1 can be interpreted as follows: During the use of the shaft as part of a drainage system, clay (SE 15) accumulated on the concrete bottom of the shaft (SE 17), forming a compact layer. Before the barracks were removed (which according to aerial photographs happened before 1964), objects no longer used were dumped in the shaft forming the fill SE 13. The larger part of the objects from SE 13 were produced after 1945. A sound storage medium is the youngest object, which could be accurately dated to 1960, its year of production. A layer of wooden boards (SE 7) might have originally been a cover for the shaft. The upper part of the filling is formed by demolition waste (SE 5), which probably forced the wooden boards (SE 7) into the shaft, during the flattening of the area.

**Objects of telecommunication**

From the finds that were discovered in SE 13, at least three—a telephone receiver and two cradles—can clearly be related to wired telecommunications. Besides these objects, several fragments made from a synthetic material were found, most likely part of devices such as telecommunications/broadcasting units or other electric instruments. The exact number of telecommunications units (e.g. telephones and supporting devices) used at the forced labour camp and power plant construction site in Kirchbichl remains unknown, despite the examination of the available sources. Even though there was only one connection to the public telecommunication system listed in the 43th issue of the German Reich’s public telephone book (Reichs-Telefonbuch) in 1940 (Reichstelefonbuch 1940, 71) one can neither confirm nor exclude the existence of other connections, for example for internal use or in temporary field telephone systems for military use. Considering the overall distribution of telephones in the 1940s (Thomas 1995, 264–266) it is very likely that the number of telecommunications units used in forced labour or concentration camps was rather small. Nonetheless, the fact that material remains of telecommunication are so rare not only in Kirchbichl, but also in other camps seems conspicuous. In my opinion, this could be a result of the following circumstances: On the one hand, removing material remains from liberated camps was very common. In many cases, different people, for example allied soldiers, civilians living nearby or former prisoners, seized a variety of objects, ranging from documents and tools to building materials and entire barrack buildings. Thus it is very likely that many telecommunications objects, especially as they are both small and valuable, were taken away for secondary use. On the other hand, it must be taken into consideration that some material remains of telecommunication units can probably no longer be identified as such. Relating small electro technical parts or unmarked casing fragments to their original device is often impossible, and for this reason they are not listed under a corresponding term in databases and publications.

The telephone receiver (object 196) is made from a black synthetic material and could be identified as a *Feldhandapparat 33* (Fig. 1). This type of receiver had been used as part of the field telephone *Feldfernsprecher 33* (Beuttel s.a., 62) or the telephone *Amtsanschließer 33* (Beuttel s.a., 92) of the German armed forces, but because of the standardisation of many parts of military equipment it might also fit other types of military telecommunication units. Other types of telephones and receivers were common for civil telephone systems of the German national mail and telephone company (*Deutsche Reichspost*) (Hirsemann/Hoffendahl 1938, 39–89; Reichspost 1939). The
remains of the telephone receiver are limited to parts of the casing. Comparisons to complete objects of the same type at the Vienna Technical Museum (Technisches Museum Wien) and the Museum of Military History in Vienna (Heeresgeschichtliches Museum Wien) show that the electro-technical elements, such as the loudspeaker, microphone, cables and the push-to-talk switch are missing. While the telephone cable and the switch might simply have gone lost or been detached accidentally, the loudspeaker and microphone must have been intentionally removed before disposal, as the casing is undamaged. Coverings for these parts can be unscrewed and are therefore removable, hence it would have been very easy to dismount the transmitting elements. Although the object has been buried for several decades at least, the screw threads are still working smoothly and thus make it possible to separate the receiver into four pieces, the main part, the cover of the loudspeaker’s shell and the cover of the microphone’s shell, which itself consists of a lid and a ring. The only remaining metal part of the receiver is a piece of a badly corroded hook, which is mounted to the main part and made the suspension of the receiver from the carrying strap that was part of the Feldfernsprecher 33 possible (Beutte 1939, 57).

Object 230_1 and object 230_2 are two cradles of similar size and made of dark brown synthetic material (Figs 2 and 3). Each of the two pieces was, according to the stamped alphanumeric code 24aC29U1 on the inside of both objects which refers to a list of military equipment from the German armed forces (Gerätliste) (Oberkommando des Heeres 1939, 3).
Fig. 4. The logo of the Staatliche Materialprüfungsanstalt Berlin-Dahlem on object 230_2 shows the manufacturers code 32 for the H. Römmler AG and the material code T for phenolic resin with textile filler (Photo P. Hinterndorfer).

Abb. 4. Das Logo der Staatlichen Materialprüfungsanstalt Berlin-Dahlem auf Objekt 230_2 zeigt den Herstellercode 32 für die H. Römmler AG und den Materialcode T für Phenolharz mit Textilfaser als Füllstoff (Foto P. Hinterndorfer).

Fig. 3. Object 230_2, modified SB-Zusatz 33 made of phenolic resin. Both humps at the top were precisely cut off (Photo P. Hinterndorfer).

Abb. 3. Objekt 230_2, modifizierter SB-Zusatz 33 aus Phenolharz. Beide Hocker an der Oberseite wurden präzise abgetrennt (Foto P. Hinterndorfer).

Materials

All objects mentioned are made from phenolic resin, a synthetic material invented by Leo Hendrik Baekland in 1909 (Jäger 2010, 34) and commonly known under one of its brand names, Bakelite. Phenolic resin is produced from phenol by condensation processes and to reduce brittleness it is mixed with fillers, for example wood flour or asbestos. The resulting material could be shaped using press moulds (Weigel 1942, 1–3). Mixed up with different fillers, special types of phenolic resin with varying durability were created to serve special purposes. Due to their formability, these materials were used, for example, as casing for electric devices, hand grips or gear wheels. Stamped marks from a material testing laboratory in Berlin (Staatliche Materialprüfungsanstalt Berlin-Dahlem), which can be found on the objects, allow the specification of the type of phenolic resin used through an alphabetic or alphanumeric code in accordance with the German industry standard DIN 7702 (Seidl 1939, 96; Weigel 1942, 131) (Fig. 4). All four parts of the telephone receiver Feldhandapparat 33 were separately branded. The ring that holds the lid for the microphone’s shell bears the material code Z3 which means it is made of phenolic resin with cellulose filler (Phenolharz mit Zellstoff als Füllstoff). All other parts of the receiver are marked by an S and therefore made of phenolic resin with wood flour filler (Phenolharz mit Holzmehl als Füllstoff) (Weigel 1942, 11). The two types of phenolic resin used for this telephone receiver not only differ in their composition, but according to the charts also in their stability. The question why the...
ring was made from a different material cannot be answered with certainty. On the one hand, using types of phenolic resin of varying quality for different parts of technical devices was common if they had to face a different amount of mechanical stress (Würgler 1942, 78). On the other hand, the ring might also be a spare part, that was produced at a time when the material specifications had been changed or the original material was not available due to the economy of scarcity resulting from the war. Comparisons with other pieces such as those in the Vienna Technical Museum could lead to further discoveries here, but exposing the relevant labels would require the dismantling of the electric components, which was not possible for preservation reasons. Two slightly different types of phenolic resin with textile filler (Phenolharz mit Textilfaser als Füllstoff), identified by the codes T and T2, were used for the two parts of the SB-Zusatz 33 (Würgler 1942, 11).

Manufacturing firms

Military equipment is usually normed, but, nonetheless, identically constructed devices, such as the named types of telephones, were produced by many different companies. Further marks on the preserved pieces indicate companies that were involved in the manufacture of these specific objects. Besides the material code, the label of the Staatliche Materialprüfungsanstalt Berlin-Dahlem generally also includes a numeric or alphanumeric code to identify the producing factory. In contrast to, for example, the list of military equipment that was designated for exclusively military, updated versions of these lists were published in different journals for plastics engineering. In 1941 over 300 companies as producers and processors of phenolic resins were supervised by this material testing laboratory and despite the standardisation of the materials, some of the companies sold them under special trade names. The numeric code 32 on object 230_2 and the telephone receiver’s main part and ring reveals that the material for these parts was produced by the enterprise H. Römmler AG in Spremberg, which sold the material type T as Hares L, type Z3 as Deurohlit Z3 and the type S as Hares S (Siebel 1941, 91). This company was founded in 1867 and produced insulation materials, sound storage media and from the 1920s also phenolic resins. During the national socialist period the H. Römmler AG also deployed forced labourers from a women’s prison in Cottbus (Frauenzuchthaus Cottbus) (HAFTSTÄTTENVERZEICHNIS EVZ ONLINE).

The finishing of the SB-Zusatz 33 (object 230_2) was carried out by the company Friedrich Reiner in Munich in 1937. This is indicated both by a metal badge, that bears the inscription Friedrich Reiner München 1937, and by a stamped company logo at the inside that shows the letters F and R in a circle. This company was founded by Friedrich Reiner in 1881 and specialised in the production of telephone systems. During the First World War, the company took part in the production of military equipment and produced detonators. Economic difficulties during the 1920s were mastered and the increase in the production of war materials in Germany also brought economic success for the enterprise Friedrich Reiner, which then manufactured mostly telephone systems for military use and also delivered electrical devices to the military research centre in Peenemünde (Heeresversuchsanstalt Peenemünde) (Ude 1981).

In the case of object 230_1 – the other SB-Zusatz 33, the company Mende – labelled by the numeric code 56, not only provided the material, but also manufactured the complete device. Alongside the mark of the Staatliche Materialprüfungsanstalt Berlin-Dahlem the object is also identified by the company logo. The metal badge which presumably like the other piece (object 230_2) displayed the manufacturing company and the year of production is not readable any more due to its poor preservation. Radio H. Mende & Co had been founded in 1923 in Dresden and produced parts made of phenolic resin and later complete electronic devices as well. During the second half of the 1930s the company mainly produced radios and was one of the biggest German companies in this branch (HEILBRONNER / LINDNER 2010, 286).

Object 196 – the telephone receiver Feldhandapparat 33 – was, according to the company logo, a combination of the letters T and N in a rhombus,
produced by the German enterprise Telefonbau und Normalzeit. This company was founded in 1899 as Deutsche Privat-Telephon-Gesellschaft H. Fuld & Co. in Frankfurt/Main by businessman Harry Fuld and together with a company for clocks it was incorporated as Telefonbau und Normalzeit in 1937. The company produced and sold telephone systems, clocks and alarm systems (WERBEABTEILUNG DER TELEFONBau UND Normalzeit 1956, 20) and also participated in the production of communications equipment for military use. At least at one of the company’s manufacturing bases employed labourers from the forced labour camp Rollwald, which was situated near the village of Nieder-Roden (today part of the German town of Rodgau) south-east of Frankfurt/Main, who were deployed in production (FOGEL 2004, 91). The number 1942 next to the logo presumably represents the production year.

The meaning of other embossed numeric and alphanumeric codes found on the described parts, could not be discovered. Based on the number format they seem not to refer to either an industry standard or a German patent. Comparisons to identically constructed objects from different producing companies could probably provide the information if these were used only by certain enterprises for internal reasons, but as was the case with the use of different types of phenolic resin on one object, this would require the dismantling of the units.

Use and alterations

The Feldfernsprecher 33 had been designed for building up instant wired communication lines in military field operations. In the simplest setting, two units of this battery-powered type of telephone were connected by a cable which enabled calls between the two devices. A crank had to be turned to initiate and end these phone calls (BEUTTEL s.a., 62). More items also made the setting up of more complex communication structures possible and with additional gadgets, including dial plates, a detached field network could also be connected to the public telecommunications network. The Amtsanschließer 33, which also fitted the Feldhandapparat 33 and was by default equipped with a dial plate, could not only be linked directly to the public telephone system, but also enabled a connection between public and field communication systems (BEUTTEL s.a., 95).

Apart from the fact that the telephone systems of which the preserved pieces were part, were designed for military use, another stamp found on all three objects proves that they were the property of the Wehrmacht, which was probably involved in guarding the forced labour camp. Equipment sold to the military was usually checked by inspection authorities (Heeres Waffenamt for the army or Bauaufsicht der Luftwaffe for the air force) to ensure that each piece fitted quality requirements. Devices running through these checks were branded by an eagle holding a swastika (a so called Reichsadler) and an alphanumeric code indicating the specific testing centre (Fig. 5). These testing centres were usually responsible either for a special company or for a whole region (THOTE 2010, 22). In this case, connecting the codes to the actual testing centres is hardly possible due to the bad preservation of the stamp and because the corresponding list (Nummerung der Abnahmestellen) is only available in its version of January 1943 and it therefore cannot be shown if or what differences to earlier versions existed. According to this list it can at least be said that both the Radio H. Mende & Co. and two factories of the Telefonbau und Normalzeit were fitted out with dedicated inspection authorities (BARCH R 3 III/650, fol. 11–36).

The exact telephone connections these objects were used to create cannot be reconstructed by the available sources. It is certain that the construction site of the hydropower plant in Kirchbichl was, as already mentioned, connected to the public telephone network. The 43rd edition of the German Reich’s telephone book (Reichs-Telefonbuch) published in 1940 includes the number of the construction site management (Reichstelefonbuch 1940, 71). Although military field telephones like the Feldfernsprecher 33 were designed for use in detached field networks, they could also, as already mentioned, be
linked to the public telephone network by additional devices. Nonetheless, the actual use of a Feldfernsprecher 33 as a device for permanent connection to the telephone network seems unlikely due to the fact, that this kind of telephone usually runs on batteries.

The detected modifications point at a secondary use of the objects. The electric parts of the microphone and the loudspeaker of the Feldhandapparat 33, which had been removed from the present object, were normed (post-genormt) (Beuttel s.a., 62) and therefore could also be integrated into different kinds of telephones used by the German national mail and telephone company (Deutsche Reichspost). That suggests, that they were probably dismounted to serve as spare parts for a telephone for civilian use, to which the whole receiver could not be attached. The possibility that the receiver’s casing was disposed of because of the embossed Reichsadler seems unlikely, due to fact that, on the one hand, a huge number of identical pieces was preserved in different contexts and, on the other, it would have been very easy to make it unrecognisable.

The alteration of the SB-Zusatz 33 is probably connected to a secondary use. Both the exact adaptation and the accurate smoothening of the cut area indicate that it was reshaped to fit a special application. Based on the known facts, it cannot be said whether this was to fit a different type of telephone receiver or to serve another task. Similar tool marks could furthermore be detected on other pieces of phenolic resin, found in the same stratigraphical unit. Casing parts, which could not be linked to a special type of device, had been precisely cut up for a reason that can only be guessed at at the moment.

At a certain point, the objects were no longer needed or even found worth keeping and were therefore thrown away into a shaft, together with a series of other objects. Conceivably this happened during tearing down the barracks in this area of the camp.

Conclusion

Summing up, a broad variety of contextual information can be gained by using different kinds of written sources, pictures and comparative objects. Not only was it possible to identify the specific device the preserved objects once belonged to, but also details about their original condition and function were established. By consulting teaching material of the German armed forces as well as collections of the Vienna Technical Museum and the Museum of Military History in Vienna it was possible to define the described finds as parts of the military telephones Feldfernsprecher 33 or Amtsanschließer 33. Presentations of private collections on the internet proved their value in the visual comparison of devices. In addition, it should be stressed that one can benefit from the fact that mass-produced and standardised devices usually bear a series of logos, marks and numbers. Contemporary publications such as operating manuals, technical journals or descriptions of industry standards allow the decoding of their meanings. In this way the raw material was identified very specifically as different types of phenolic resin. Several companies from different parts of Germany, which were involved in the production of the items described, either as producers of raw material or as manufacturers of electric devices, could be traced. Moreover, the objects could be linked to a former owner, in this case the German armed forces (Wehrmacht). The items were not only used for the purpose they were designed for, as alterations detected also indicated a secondary use. The removal of electrical parts, probably to be reused within other telephones, indicates there was a precise differentiation between parts that were to be used further and parts that were to be disposed of. Last but not least, the information gained makes it possible to compare telecommunications objects that might be or already have been found at other camps to the items used at Kirchbichl.
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