In the 17th century, Ingolstadt was the main Bavarian fortress and home of a leading catholic university. In 1632, Ingolstadt was able to resist a Swedish attack from 28 April to 4 May. The Swedish camp is documented in an almost contemporary watercolour and a plan in the War Archive in Stockholm. The camp is completely covered by modern residential areas today. Hence, for the localization of the camp, archaeological methods seem to be less promising compared to the study of historical plans. Also, direct evidence of the fighting of 1632 has not been found yet within the settlement of the old town of Ingolstadt, and none of the settlements surrounding Ingolstadt disappeared in the 17th century. What actually remains from the attack is the white horse that once carried the Swedish king Gustav Adolf. It was killed by a small cannon ball fired from a bastion called "Eselbastei" on 3 May. To this day, the stuffed horse is on display at the Ingolstadt City Museum. Remains of the renaissance bastion were discovered during archaeological excavations within the city. The identification was possible with the help of a contemporary model of Ingolstadt. However, building activities dating to the time of the Thirty Year’s War could not be securely identified as yet.

Zusammenfassung
The Swedish threat

In 1539 Prince Albrecht (1528–1579) officially laid the foundation for the construction of the main Bavarian Fortress in Ingolstadt. Over centuries the town became one of the most important strategic points along the Danube in Southern Germany (Fig. 1). In the 16th and 17th centuries, the University of Ingolstadt was the leading Catholic university in the Holy Roman Empire. Hence Ingolstadt additionally became a theological stronghold (Hofmann 2006, Schönauer 2007). The Swedish offensive against Franconia, Swabia and Bavaria started in March 1632. On April 15, King Gustav Adolf (1594–1632) crossed the river Lech where he defeated the Bavarian Marshal Tilly. Tilly was seriously injured and died in Ingolstadt a few days later. Surprisingly, Ingolstadt was able to resist the Swedish attack from 28 April to 4 May. Gustav Adolf’s primary aim was to destroy the bridge across the river Danube (Schönauer 2007, 52–53). The Swedish troops lost decisive days resulting in their failure to reach and occupy the town of Regensburg, before Elector Maximilian (1573–1651) reached the town. A wooden model from 1571 gives a good impression of how the Ingolstadt fortress looked before the Swedish army arrived (Fig. 2). The fortress was unfinished. A bridgehead was missing and had to be erected within a few months (Kuhn 1931, 84).
The Swedish camp

The Swedish attack is documented in an almost contemporary watercolour from Johannes Ulrich Windberger (Fig. 3). It shows the new bridgehead as well as the central area of the Swedish camp lying in the South of Ingolstadt within range of the Bavarian cannons. Its bastions are similar to those of the Swedish camp excavated at Latdorf near Bernburg in Saxony-Anhalt (Fahr et al. 2009, 156). A plan of the Swedish camp in the War Archive in Stockholm, drawn by an unknown artist in the year 1632 or shortly after (Schönauer 2007, 53), shows us a widespread camp with long trenches and redoubts (Fig. 4). Unlike Latdorf, the camp of Ingolstadt is completely covered by modern residential areas today. Thus, it is hard to verify the plan from Stockholm (Schönauer 2007, 53, Kuhn 1931, 106). There are neither traces of any Swedish fortifications left on the ground surface nor any hints in old maps which means that either the camp was never erected the way the plan shows, or it has been leveled completely soon after the withdrawal of the Swedish army. Furthermore it is not clear if the delineated trenches were fortified ditches as in Latdorf or only shallow trenches (Schönauer 2007, 53), maybe similar to the munimina pectoralia (dugouts) of the watercolour from Johannes Windberger (see Fig. 3). Shallow trenches are difficult to find with archaeological methods and may be swept away by floods which influenced the eastern part of the camp in the 18th and 19th centuries (Jerz / Schmidt-Kaler 1999, 39). Parts of the central area of the camp are covered by earth banks for the railway station and the railway tracks today (Jerz / Schmidt-Kaler 1999, 37). Thus traces of the camp could probably be found more easily in its western parts.

The enclosure of the camp is obviously aligned to a branch of the Danube. Hence, its exact localization is only possible by identifying the watercourses of the 17th century. But the contemporaneous plans had no exact scale and
Fig. 3. Water colour depicting the Swedish camp at Ingolstadt, painted by Johannes Ulrich Windberger in 1633 (© Stadtarchiv Ingolstadt).

Abb. 3. Aquarell des Schwedenlagers vor Ingolstadt von Johannes Ulrich Windberger, 1633 (© Stadtarchiv Ingolstadt).

Fig. 4. Plan drawing of the Swedish camp, made in 1632? (© Riksarkivet Stockholm, Swedish Military Archives, collection Sweden’s War number 3:38).

the broad river valley of the Danube is, to a limited extent, still subject to natural change (Jerz/Schmidt-Kaler 1999, 39). In 1931 the local historian Hanns Kuhn transferred the plan from Stockholm to a contemporary map (Kuhn 1931, attachments) (Fig. 5). His attempt shows the difficulties encountered in localizing the camp.

The branch of the Danube on the plan from Stockholm has two distinctive sections in the western part of the camp: two U-turns in the West and two parallel watercourses creating two “islands” west of the central area (see Fig. 4). In a plan from Peter de Coquille dated 1723 the U-turns can still be identified, but not the “islands” (Fig. 6). The arm of the river is now called Mühlgraben. In 1931 the Mühlgraben had lost most of its water. The U-turns have nearly disappeared from the plan and this may be the reason why they are missing in the plan of Hanns Kuhn. Obviously he thought they were exaggerated. The former riverbed is, however, still visible.

The transference of the Swedish trenches to the map from 1723 offers two possibilities for the expansion of the camp to the South between U-turns and “islands”: the Mühlgraben and, even more to the South, a former watercourse with little water left in it. Hanns Kuhn prefers the latter alternative, despite the Mühlgraben is as rectilinear as the watercourse in the plan from Stockholm. Again he seems to mistrust the Swedish plan. As there are no scientific data available we do not know if the southern watercourse was filled with water in 1632.
In the plan from Stockholm east of the rectilinear section the water is divided in two arms surrounding two “islands”. The watercolour of Johannes Windberger (see Fig. 3) shows a stable (H) on the northern “island” that was used as chancellery by the Swedish king (SCHÖNAUER 2007, 53). The trenches and redoubts on the plan from Stockholm cannot be found on the “islands” of the watercolour, perhaps a hint that the camp was not finished completely. North of the “islands” Windberger depicted a hospital for plague victims (G).

Although the “islands” are not to be found in the plans from 1723 and 1831, visible traces of them must have existed up to the 19th century, as a plan from 1867 shows them west of the central station (Fig. 7). A similar situation cannot be found further south, so it is more likely that the Mühlgraben is the branch of the Danube shown in the plan from Stockholm. And finally, could it be that Johannes Windberger shifted the hospital for plague victims to the East in order to include it into his watercolour? An undated mass grave discovered further west in 1973 (DONAU KURIER 1973) was then interpreted as a legacy of the Thirty Years’ War and may be connected with the burial place of the hospital visible in the plan from 1723 (see Fig. 6). It is probable that victims of 1632 were buried in this graveyard, which then was situated little further to the West.

In summary, for the localization of the camp, archaeological methods seem to be less promising compared to the study of historical maps. Large-scale excavations are not possible in the densely built-up area south of Ingolstadt and also metal detectors, which are so important for battlefield archaeology (HOFMANN 2013, 210), can hardly be used. The plan from Stockholm seems to be quite a precise basis for such studies, which should not be underestimated.

What actually remains from the attack of 1632? During a reconnaissance of the fortifications on 3 May, the white horse carrying Gustav Adolf was struck and killed by a small cannon ball fired from a bastion called Eselbastei. After
the withdrawal of the Swedish army the inhabitants of Ingolstadt recovered the horse and preserved it as a celebrated trophy (Fig. 8). To this day, this trophy can be viewed at the Ingolstadt City Museum. Justifiable perhaps since the triumphant march of Gustav Adolf was cut short in Ingolstadt 1632. He died in the same year near Lützen in Saxony-Anhalt.

Archaeological excavations within Ingolstadt fortress

An archeological investigation within the fortress of Ingolstadt was begun in 1998 and is still continuing on a former industrial site near to the Danube on the south-eastern rim of the fortification. The main objective of these investigations is to answer the question or at least to obtain a glimpse of what
The Ingolstadt fortress in general is a complex, widely spread structure with deep foundations, encircling the city of Ingolstadt in several fortification lines of different periods in the renaissance to the 19th century. Apart from those still existing and most impressive fortification relics of the 19th century, their predecessors from the time of the Renaissance and Baroque are still in existence though mostly covered today. And, as current research shows, the building remains are of truly impressive dimensions. The history of the Ingolstadt fortress gathered momentum in 1539, when Bavarian Duke Wilhelm IV (1493–1550) started to strengthen Ingolstadt as a stronghold (von Reitzenstein 1974, 274). Similar to the medieval city wall, but in style of the Italian renaissance, the city was fortified with a circular system of ramparts and ditches with bastions. Count Reinhard Solms zu Münzenberg (1491–1562) was appointed as constructor (Becker 2002, XCVIII). Münzenberg put a low embankment in front of the city wall with the intention to protect the town from shell fire. Bastions were erected in strategically important places. These bastions jutted out of the rampart into a second ditch (Aichner 2002, CVI, Becker 2002, XCVIII). Münzenberg put a low embankment in front of the city wall with the intention to protect the town from shell fire. Bastions were erected in strategically important places. These bastions jutted out of the rampart into a second ditch (Aichner 2002, CVI, Becker 2002, XCVIII).

On the eastern rim of the fortification, the Eselbastei with its characteristic appearance of a semicircular tower was built (Aichner 2000, 147, Aichner 2002, CIX). The bastion’s important and even legendary role during the Thirty Year’s War has already been pointed out (Schönauer 2007, 48). In addition to other features the present excavation has revealed relics of the fortification of the 16th century (Fig. 9). Comparing the archaeological remains with the city model of Jakob Sandtner from 1572/73 (Fig. 10), the Eselbastei can easily be recognized. But differences in details show that we are confronted with a later phase of the renaissance fortification (Fig. 11). The exact dating is yet not clear but must lie some time after 1573 (Sandner 2014, 461).

As the excavations are still in progress no reports can be cited. All excavations are carried out by Pro Arch GmbH, Ingolstadt.
Fig. 10. Detail of the Sandtner model of Ingolstadt (1572/73) (see Fig. 2): the Eselbastei is located at the left near the Danube; on the right the so called Feldkirchner-Tor Bastei (© Stadtarchiv Ingolstadt).

Abb. 10. Detail des Stadtmodells von Jakob Sandtner (vgl. Abb. 2): die Eselbastei liegt links, in der Nähe der Donau; auf der rechten Seite liegt die so genannte Feldkirchner-Tor Bastei (© Stadtarchiv Ingolstadt).

Fig. 11. Left: Relics of the 19th century fortification. The fortification of the Renaissance can be recognized because of its characteristic apsidal form. All other walls belong – at present state of analysis – to the construction after the Thirty Year’s War. (© ProArch GmbH, Ingolstadt).

The situation inside the fortress

What happened inside the fortress of Ingolstadt and how were the inhabitants of Ingolstadt affected by the events? It is known from written documents that the town with its roughly 700 houses had to give shelter to c. 13,000 people, a heavy burden compared to 5,000 inhabitants in normal times (SCHÖNAUER 2007, 88, 109). Many of them were refugees from the surrounding villages. It is recorded that all persons were housed in the existing buildings (SCHÖNAUER 2007, 210–214). Especially in the northern areas of the city many gardens existed, as the wooden model of Jakob Sandtner indicates. They could have been used to put up refugees or soldiers in temporary accommodations. This could have included additional wells or cesspits. Archaeological investigations have not as yet revealed how Ingolstadt adapted to this difficult situation in the 1630s. On the contrary, the number of dated features in the old part of Ingolstadt seems to decrease (Fig. 12). This may reflect the crisis of that century but not the concrete situation of the Swedish threat. So the archaeological research seems to confirm the written records.

After the withdrawal of the Swedish army the situation outside the city remained dangerous and the refugees were afraid to leave the fortress. As a consequence, rubbish and the outbreaks of diseases became serious problems within the city walls (SCHÖNAUER 2007, 55–56, 90–94, 105). Therefore the authorities asked the inhabitants to keep streets, houses and cesspits clean. Calls for cleanliness against the outbreak of epidemics were not new in the first half of the 17th century (SCHÖNAUER 2007, 89–90, 97–98). The plague rules of Wolfgang Peisser from 1521 already had connected the outbreak of plagues to the contamination of the soil (HOFMANN 2006, 545). But it is documented in the written sources that these calls did not result in profound changes (SCHÖNAUER 2007, 90). Archaeology seems to confirm this. Several cesspits filled with waste, glass- and potsherds from the 16th and 17th centuries show that their clearing was neglected in Ingolstadt. Published or at least briefly mentioned in literature are the cesspits from the Georg-Oberhäusser-Straße (SCHÜTZ/TILLMANN 1991), the Franziskanerstraße/Mauthstraße (RIEDEL 1999, 2002, STEINBERGER 1999), the Ludwigstraße 12 (SCHMIDT 2010, 443–444) and the Harderstraße 11 (ENGASSER/RIEDEL 2003, 375–376). Others from the Moritzstraße (SCHÖNEWALD/RIEDEL 2011, 130–133) and the Ludwigstraße 12 (SCHMIDT 2010, 446) and 18 (MEIXNER 2003, 395) were probably in use up to the 18th century. But later the deep and narrow cesspits from late-medieval times, which were difficult to keep clean, were no longer in use. Complete or nearly complete ceramic cooking pots found in the cesspits mainly belong to the 16th and 17th centuries. In the 18th century, they are rare (Fig. 13).

Complete or nearly complete vessels are of special interest because they were thrown into the pits directly after they lost their function, whereas little
Potsherds may have had a longer way to their final position. Also, the fillings of the cesspits change. The younger sediments are less homogeneous and contain more gravel and rubble (Schmidt 2010, 443–444, 446, Riedel 1999, 28, 42–44, Riedel 2002, 43, 49, Schönewald / Riedel 2011, 130–133). Hence, it is likely that the clearing of the cesspits was taken more seriously during the war or at least since the decades shortly after. Relevant notes in the written sources are as yet unknown.

Finally the medieval type of cesspits was completely abandoned and replaced by shallow pits. Many of them were still in use in the 20th century which is why their contents (Fig. 14) were the subjects of archaeological excavations only in recent years (Klumpp 2009). An interesting parallel to this can be found in Höxter, Westphalia. After the city was conquered during the Thirty Year’s War, it suffered a long depletion of its economic power indicated by the nearly complete abandonment of the old cesspits (Stephan 2012, 280).

Diseases and fighting resulted in many deaths. The cemetery at St. Sebastian’s Church within the fortress was enlarged in 1632 (Schönauer 2007, 16, 42). Excavations conducted there in 2003 and 2004, which examined about 160 graves and delivered bones of several other individuals, revealed only regular burials and no obvious victims of war and diseases or even mass-graves (Fig. 15) (Böwing / Riedel 2011, 670–671). However, a detailed examination of the burials has not yet taken place. Hence, we conclude that direct evidence of the fighting of 1632 has not been found yet within the historic city of Ingolstadt.

Fig. 13. Finds from cesspits, 14th to 17th centuries (© Stadtarchiv Ingolstadt).


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2 Pers. comm. Siegfried Hofmann, Stadtarchiv Ingolstadt.
Lastly, what happened in the areas surrounding Ingolstadt? The threat to Ingolstadt was enormous but because the city did not fall it was spared any damage. The villages around the city, however, suffered a different fate. Oberstimm, where the Swedish army had its headquarters, was almost completely destroyed by fire (Kuhn 1931, 105). The little market town of Geisenfeld also suffered severely (Schönauer 2007, 60). But up to now even these recorded catastrophes cannot be confirmed by archaeological excavations in the old parts of the settlements. Especially Oberstimm has been in the focus of archaeological research for many years because of its Roman fort lying under the modern village. Excavations with an area of about 4,500 square meters in the fort, conducted by the Roman Germanic Commission of the German Archaeological Institute between 1968 and 1971, revealed only few post-roman structures such as post-holes, traces of furnaces and an early modern lane (Schönberger 1978, 102–104, 142, 147). Medieval or post-medieval finds were extremely rare and included two coins, 22 potsherds and a tile fragment (Schönberger 1978, 147, 276–277). Nothing indicates an early modern fire disaster. In 2005, only 50 meters north of the church which is also situated in the fort-area, another excavation within the old center of Oberstimm took place. With 224 square meters it was significantly smaller but it delivered many more post-roman finds. The investigations explored the backyard of a farm with several working and waste pits. Finds from the 13th to the 16th centuries are

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numerous. Those of the 17th century are again rare. No burnt material or finds affected by fire were included in the findings.

Oberstimm is not the only example demonstrating that disasters documented in written sources may not be detectable with archaeological methods. The deserted village of Lindelach in Franconia is also such a case (Michl 2012; 2013).

Looking at the lifetime of the settlements surrounding Ingolstadt many of them were abandoned in the centuries before the city was fortified. But in contrast to other regions no settlement disappeared in the 17th century (Figs. 16 and 17). Obviously, enough people survived as refugees in the fortress to rebuild the villages after the end of the war (Schönauer 2007, 105). Written documents give a rather detailed account. Though the settlements in the floodplains close to Ingolstadt had recovered to a certain extent by 1643 (Schönauer 2007, 24), villages in more distance to the fortress such as Baar or Zuchering, remained in a poor state for many years. This is well documented in the tax book from 1650 (Kühn 1930) and is another proof that the consequences of war and violence are difficult to identify in the archaeological record (Heinrich-Tamáska 2013, 14).

In summary, what is the archaeological legacy of 4 May 1632? At present state of research only the padded white horse of King Gustav Adolf.

References

Figs. 16 and 17. Lifetime of the settlements surrounding Ingolstadt.
Abb. 16 und 17. Lebensdauer der Siedlungen um Ingolstadt.