THE IMPORTANCE AND FUNCTIONS OF MODELS FOR GOLDSMITHS' WORK AND JEWELLERY

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Models exist in nearly all fields of artistic creation — these are mostly works of small scale, which serve in different ways in the preparation of the future work of art. There are various methods:

1. Rough sketches (as the "bozzetto" in painting and sculpture) which form an initial stage in clarifying the process of formal invention. 2. Already rather elaborate works which are intended to give a specific visual idea, especially for the patron. 3. Detailed original models or patterns, on a scale 1:1, which usually form the starting point for several copies made by the casting technique. We have restricted ourselves to these three ways in the works of the goldsmith and jeweller from the 16th to the early 19th century, with special consideration for the German-speaking areas.

There is a considerable number of drawings for goldsmiths' work. However, three-dimensional plastic models, in the form of sketches, for German goldsmiths' work are extremely rare. One of the few examples is the limewood "bozzetto" of Saint John the Evangelist (in the Bavarian National Museum in Munich) which was carved in 1738 by Egid Verhelst. The "bozzetto", only 13.9 cm high, provides a guide for a 77 cm silver figure which was executed by the Augsburg goldsmith, Franz Christoph Maederl, mainly in the repoussé technique, for the cathedral of Constance.

Following this small "bozzetto", the sculptor usually executed a second, considerably larger, wood model to the scale of the final work. This statue served as the goldsmith's immediate model and stood in front of him as he embossed his silver figure. During the working process, the craftsman continuously had to transfer the dimensions and proportions from this wooden model to the nascent silver figure. In the case of the Constance figure, the 1:1 scale wooden model has been lost, but several other execution models for silver figures still exist. At the same time, some of them also served as substitutes for the precious silver figures which were shown only on high feast days. Sometimes these wooden models handed down to posterity the appearance of lost silver figures which had been melted down. These 1:1 scale models exist not only for ecclesiastical silver figures which were usually executed in repoussé work, but also for embossed church objects and vessels. An excellent example is the limewood frame (in Berlin) carved by Melchior Hefele in Vienna in 1751, which was the origin for the embossed silver frame for the miraculous figure in the church of Sonntagberg in Austria. The Viennese goldsmith, Wilhelm Riedl, executed the silver work after this 1:1 scale model, which was cut for this purpose into different pieces. At the same time, Hefele constructed a kind of small-scale model of the whole altar, which served to help one visualize the ensemble. (It is comparable to the model executed in wood, marble and bronze by Antonio Corradini in about 1733 for the tomb of St John Nepomuc in the cathedral of Prague which was realized mainly in silver.)

This group of religious objects is especially typical of the catholic South of the Holy Roman Empire. But these 1:1 scale models also exist in secular art, as is demonstrated by the wooden model for the drinking vessel of a monkey, dated 1637, which precedes the silver cup of the Bern Society of the Monkey. Both of these objects are in the Historical Museum in Bern.

Besides this well-known and widely spread method of working with wooden models, there also exists the less familiar possibility of 1:1 scale plaster models for embossed silver works. For instance, in an inventory of the workshop of Guillelmus de Grof, a plaster model for the ex-voto statue of the kneeling prince Max (III) Joseph of Bavaria is mentioned. The silver figure, executed in 1737 in the repoussé technique, is located in the pilgrimage chapel of Altoetting in Bavaria. However, practically none of this type of plaster models still exist due to the fragility of the material, as plaster quickly becomes dirty and shabby. In Italy especially clay was used as a material for models. Besides wood and plaster wax was used as a material for small scale models, also tallow, sulphur and bone powder, as mentioned by Cennino Cennini and Vanuccio Biringuccio. Even in the case of embossed reliefs of jewels, etc., the goldsmith or jeweller usually first created a wax "modello" which served as a visual model during the process of embossing. Benvenuto Cellini, for instance, in 1565, described this working method very clearly.

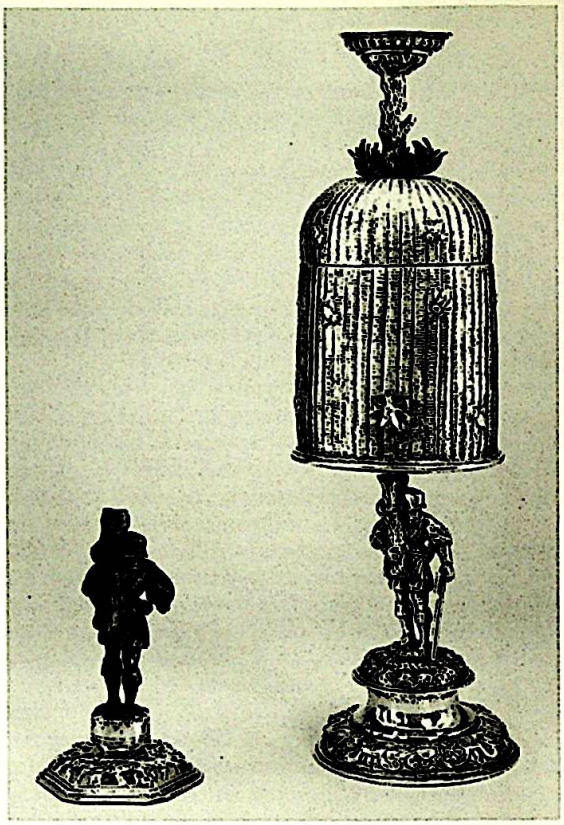
Up to now we have concentrated mostly on goldsmiths' work executed in the repoussé technique. For cast work of larger scale, a plaster model was often made. This can easily be modelled in a half wet state and formed with a knife and engraving tools in a dry state. For instance, the Berlin writer, Peter Nathan Sprengel, in 1772 mentions a model of a cast chandelier formed in plaster. A plaster model of a ewer is represented in a portrait of the Parisian goldsmith, Thomas Germain, painted in 1736 by Nicolas de Largillière (Gulbenkian Collection, Lisbon). On the plaster, details could be applied and modelled in wax. Thus Sprengel refers to a centre piece in the form of a rock (to be executed in silver), modelled by the sculptor Johann Christian Hoppenhaupt which was enriched with wax applications.

A remarkably well documented, though rather late example of the combination of wood and wax, are the large chandeliers ordered by King Max Joseph I of Bavaria and executed in silver by the Munich goldsmith Friedrich Jehle (in the Bavarian National Museum): Michael Hautmann made the wooden models of the chandeliers; Ludwig Schwanthaler modelled the pedestal reliefs in wax, which were also destined to be cast in silver; and finally Joseph Maria Christen formed terracotta models for the crowning silver figures. Furthermore, the drawings and the wax models for the pierced border of a "plat de ménage", by Ludwig Schwanthaler, still exist. Earlier examples of these kinds of models are the wax reliefs created by Giambologna for the silver decoration of a cabinet, dated 1585.

Not only were whole vessels and other objects prepared by plaster-wax models, but so were the details and the appliqué decorations: they were made in casting technique and added to the embossed piece. An example of these are the models of plaster and wax made by Alessandro Algardi in 1646 for the cast figure decoration of several silver candlesticks commissioned for the cathedral of Siena. A particularly striking example of this genre occurs in the already mentioned portrait of Thomas Germain by Nicolas de Largillière.

There we see the model of a large coffee or hot water pot: its body is already roughly executed in repoussé technique, but obviously not yet finished and polished; the plastic parts, afterwards to be cast in silver are modelled in wax. This seemingly astonishing technique of wax applications (for cast decoration) on embossed silver is mentioned by Cellini in 1565 and expressly described by Sprengel in 1772. Johann Samuel Halle in 1761, too, refers to a basic model of copper or silver coated with wax. Even Theophilus Presbyter in about 1100 speaks of the wax model of a handle applied to a silver embossed chalice. Certainly wax was frequently used, especially for three-dimensional applications on models, as well as jewellery. For example, in the inventory of the belongings of King Philipp II of Spain, wax models for jewel-like buttons are mentioned. They were supported on thin sheets of copper and brass. There are ample sources of information for the use of wax (or plaster-wax) models for jewellery in the 19th century, for example, in connection with Charles Ricketts, François-Désiré Froment-Meurice, Louis Rault and Alphonse Fouquet.

There are also a few wood sculptures which are certainly models (on the scale 1:1) for small silver cast figures. By far the most important example is the boxwood figure of the Earth (in Berlin), which is the casting model for the stem figure of the so-called "Merkel'sche Tafelaufsatz" created by Wenzel Jamnitzer in 1549 (Rijksmuseum, Amsterdam). Lesser well-known is the statuette of a peasant (in the Bavarian National Museum) which was prepared for a silver cast stem figure (fig. 1). As the casting mould taken from the wood model probably was made out of clay, a shrinkage of about 10% resulted, so that the silver figure is somewhat smaller. It is not surprising that several such silver stem figures exist, which were used in different ways



1. Statuette of a peasant, wood, Nuremberg, c. 1590, Bavarian National Museum, Munich, and beehive cup, silver, Hans Kellner, Nuremberg, c. 1590, private collection.

for Nuremberg cups. One of the most original is the beehive cup created by the Nuremberg goldsmith Hans Kellner in about 1590 (private collection) in which the large beehive seems to balance on top of the stem held by the peasant. Another less important example is a cup in Dortmund, exceptionally well executed in copper.

Wood models were also realised for cast silver work of a considerably larger scale. For example, the French sculptor Pierre Legros the Younger made a stucco model for the projected silver figure of St Ignace in Il Gesu in Rome, completed in about 1698. Afterwards a life-size wood model was executed, which preceded the casting of the statue.

There are a lot of intricate wood sculptures which are said to be models for goldsmiths. However, in many individual cases we have to clarify whether these carvings really are models — often they were autonomous works of art made as "Kunstkammer" objects which were appreciated for their virtuoso character without the explicit intention of a subsequent execution of precious metal. For example, the "tazza" (in Berlin) carved in boxwood by Peter Opel in 1612 has always been regarded as a model for goldsmiths' work. However, it probably represents an independent creation, perhaps for a "Kunstkammer". It would have been very costly in terms of labour to carve a detailed model in wood

for a silver object and not to form it in wax or plaster – especially when the relief in the bottom of the "tazza" is executed in the repoussé technique. The same seems to be true of a carved pearwood "tazza" in the Metropolitan Museum of Art, dated to the second quarter of the 16th century.

Stone models, which are still rarer, also belong to the category of original models. Obviously authenticated stone models only exist in the field of medals and plaquettes, such as those by Peter Floetner, which are cast in bronze or lead. Lead casts from these stone models, as intermediary or reproduction models, were made not only because of the fragility of the original, but also because of their rareness and artistic value. By the procedure of lead casting, the original could be multiplied to serve different purposes in the goldsmith workshop. As in the case of the wood "tazze" in Berlin and New York, it is rather uncertain if the roundel relief cut in limestone which is preserved in Cambridge, Massachusetts and ascribed to a follower of Peter Floetner, is an authentic goldsmiths' model for the foot of a vessel which had to be cast in silver afterwards.

The previous shown original models in wood, wax or stone represent exceptional objects. Usually only the samples in lead remain and these always denote intermediary or reproduction models: the delicate and fragile material of wax is replaced by the relatively stable material of lead. These lead models can easily be multiplied by the casting process. The very fine and subtle lead need not be chased after the casting. The lead models, called "Patronen" in German, and the corresponding models were often trade goods which presumably were sold at the international fairs such as Frankfurt and Leipzig. The models and moulds frequently formed the most important stock of a goldsmith's workshop which, after the death of the master, were usually inherited by the heirs or, more rarely, sold and dispersed. Sometimes the casting moulds were also lent out by one goldsmith to another. In 1653 there was, for example, in Hamburg, a law-suit concerning large moulds borrowed by a goldsmith colleague and not returned. However, the master goldsmith did not make all the models himself, particularly in larger towns of Germany. With advanced specialisation, such models were produced by the "Patronenmachern" (pattern makers), usually also goldsmiths, especially married journeymen.

Initially, the lead casts were chiefly requested as workshop patterns, but they soon became appreciated collectors' items. In the Late Renaissance especially the fine lead casts corresponded to the predominant value set on precious objects of small scale and particularly of subtle works with a detailed surface. Furthermore this predilection for lead pattern was in accordance with the collectors' interest in the artist's "prima idea" which appeared in the original model.

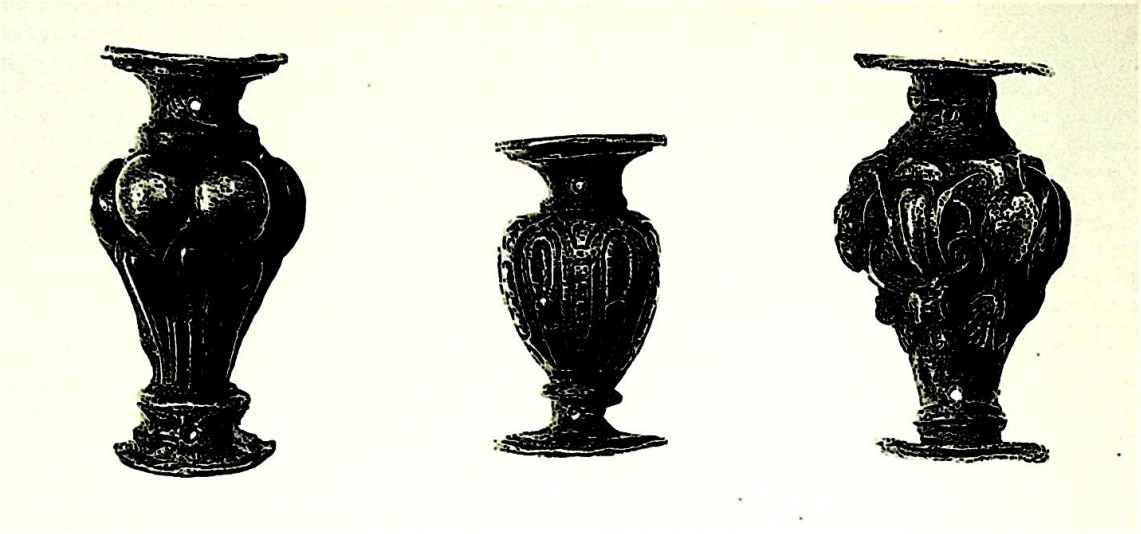
This special function of the lead model or pattern can be demonstrated by the example of the collection of the Historical Museum in Basel. Originally, the models were the stock of two different goldsmith workshops, one from the Gothic and one from the Renaissance. Already by the third quarter of the 16th century these objects had become collectors' items and formed a considerable part of the important cabinet of curiosities created by the Basel collector, Basilius Amerbach. The second important collection of models and patterns, in the German-speaking area, is in the Museum of Decorative Arts in Berlin, originally from the former Berlin "Kunstkammer". A much later stage of collecting is represented by the goldsmiths' models and especially led patterns in the Bavarian National Museum in Munich. In the 1860's, after the dissolution of many goldsmith workshops in the town of Augsburg, a princely patron acquired the very large stock of an Augsburg goldsmith studio, which also included parts of a jewellery and base metal workshop, and donated the whole collection of about 3000 objects in 1871 to the museum.

As the specimens in the museums in Basel, Berlin and Munich clearly demonstrate, mainly individual cast elements of larger silver work were prepared in the form of lead models or patterns. Among them, the Basel lead models, mostly made in Nuremberg in the second half of the 16th century, show a remarkable homogeneity of style. There are many elements such as ornamented friezes, mouldings, knobs and handles. Numerous borders for cups and dishes also exist, but often as a single segment. We may presume that such individual pieces were multiplied by the casting technique for forming an entire circle of a rim, for instance of a foot or a dish.

Particularly interesting are two patterns for the rims of dishes (in Munich and Berlin), made by Wenzel Jamnitzer in Nuremberg in about 1560. In this case, they are cast in copper, a metal which can usually be cast only with difficulty. In contrast to the lead patterns which are generally not chased at all, these two copper patterns are very precisely chased. The two objects are identical in form, but different in scale. Presumably these patterns, in an especially resistant material, were made expressly for the practical purposes of the goldsmiths' workshop.

Besides the above mentioned items, we also find three-dimensional elements which could be cast as a whole, for instance entire feet of vessels. This fact presupposes that such feet also were cast in silver, as a whole, and not only worked in the repoussé technique. But, of course, it is also possible that these lead objects were not actual goldsmith patterns, but simply casts of existing objects, made for documentation purposes.

Excellent examples of cast pieces for larger goldsmiths' work are of the knobs of stems of chalices and cups (fig. 2). Such silver knobs are usually cast (in sand-casting) in two identical halves and then soldered together. Thus lead patterns of knobs are normally preserved only in single halves. The samples of knobs in the Bavarian National Museum are to be compared with different goldsmith objects, especially of Nuremberg origin.



2. Patterns for knobs of stems, lead, South Germany, late 16th century, Bavarian National Museum, Munich.

3. Patterns for appliqué decorations of cups, lead, South Germany, late 16th century, Bavarian National Museum, Munich.

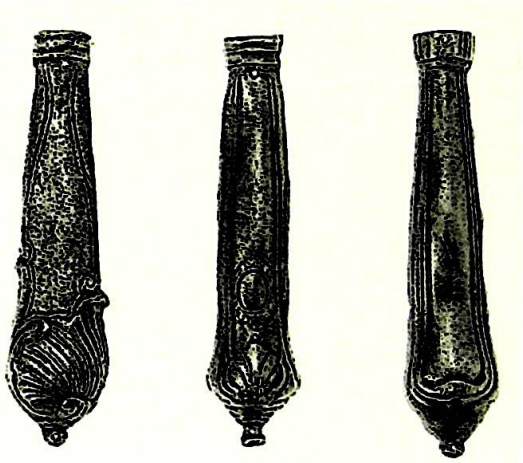
Lead patterns were frequently used for the casting of appliqués (fig. 3), making up the three-dimensional decoration of stems and covers of cups, etc. As in the case of the stem knobs, we can find that these patterns and forms circulated over great distances. For that reason, one no longer can maintain the opinion that silver objects with identical appliqué decoration originated in the same workshop. For instance, a lot of different lead patterns exist from the Nuremberg centre of goldsmithing art. Silver cast copies of these patterns are found not only in Nuremberg, but also all over Southern Germany and Switzerland.

Such patterns for cast parts were, of course, used not only in the Renaissance, but also in later centuries, especially in the 18th century. It would be highly interesting to study in detail the cast appliqué decoration, for instance, of the Augsburg goldsmiths of the 18th century and also, in England, of Paul de Lamerie whose moulds were sold and used also by other goldsmiths. Actual lead patterns of this kind are obviously very rare – lead patterns of handles were found in Williamsburg, Virginia, during the excavation of an 18th century goldsmith's workshop. Models for plates made in lead mentioned in the workshop of George Wickes may also belong to this category, but more probably are presentation objects for the costumer. For instance, in 1728 the ducal court of Wuerttemberg demanded models "zur Prob", that is as samples in wood, tin and pewter, for a table service it wished to order in Augsburg.

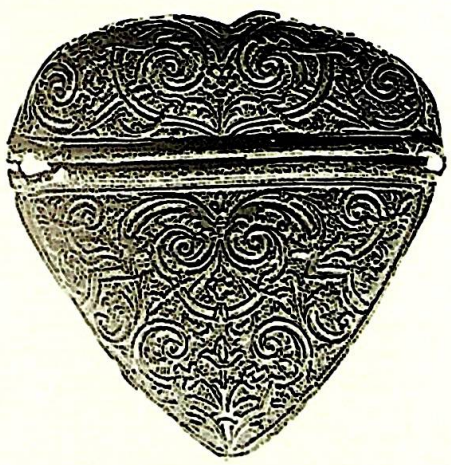
Furthermore, we can assume that in France especially bronze models were also occasionally used. They were extremely solid positives for the production of casting moulds (the silver cast objects had to be chased carefully afterwards), used particularly in the workshop of Jean-Baptiste-Claude Odiot. On the other hand, there are silvered bronze models of entire tureens which are not actual models, but demonstration objects showing the particular assembling technique of Odiot.

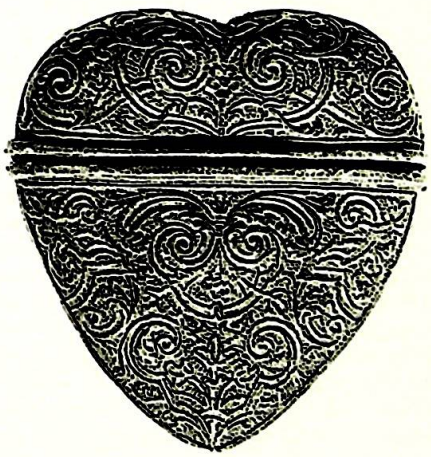
Of course, lead patterns for entire objects, especially of small scale, also existed – always on condition that the objects formed after these patterns were cast. By chance same objects, as least from the 18th century, have come down to us as lead patterns as well as silver cast examples. In the Bavarian National Museum, there is the lead pattern for a heart-shaped snuff box with strapwork decor (fig. 4), which was presumably cast in Augsburg at the beginning of the 18th century in several copies. The Historical Museum in Basel possesses the lead pattern of a small perfume bottle, by Abel Handmann, dating from the middle of the 18th century and cast very delicately in silver.

The lead patterns for knife handles produced in Augsburg during the 18th century belong to the same field (fig. 5), the silver executions were made of two cast halves filled with pitch or a similar substance and soldered together. It is a remarkable fact that there are no impressions of marks



5. Patterns for knife handles, lead, Augsburg, second to third quarter of 18th century, Bavarian National Museum, Munich.





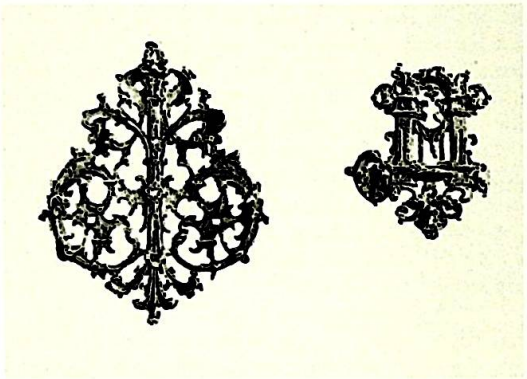
4. Pattern in two parts for a box, lead, South Germany (Augsburg?), early 18th century, Bavarian National Museum, Munich.

on the ferrule of the lead cast knife handle – in Augsburg the marks were always struck at this point. Therefore, these lead objects are not casts after already existing silver handles, but actually patterns for producing silver handles.

Sometimes, however, it is rather difficult to decide if a lead object really represents a pattern for cast pieces or is merely a reproduction cast made for documentary purposes. That is the case if the lead items are not retouched, but are left in a raw state, especially on the edges and the seams. Actual cast lead patterns, which were intended to be used for casting again, on the contrary usually show a very cleaned, polished surface. We may also speak of documentary casts when the corresponding silver objects are not cast, but worked in the repoussé technique. That applies, for example, to some lead casts, in the Bavarian National Museum, of Augsburg prayer book covers. Since these highly characteristic book covers from Augsburg were always embossed with extreme virtuosity, such leads can only be reproduction casts; consequently the borders of these casts were not retouched. Such lead casts have the same function as the plaster casts taken from watch cases executed in repoussé work in England during the 18th century. In Germany there are plaster casts from the workshop of the goldsmith Egidius Hablitschek in Tittmoning – a very rare example of the 18th century. The technique of plaster casts from silver objects, made for documentary reasons, which has its sources already in Greek metalwork, is also represented by the important plaster cast of the silver saddle of Emperor Maximilian II made by Wenzel Jamnitzer probably in 1564, today in Basel. In the era prior to photographic reproduction, the goldsmiths easily created a collection of patterns by means of such plaster casts serving as records of the objects which had been produced in the workshop but which were no longer available because the originals had been sold.

Obviously no complete workshop's pattern stock exists from the period of the Renaissance and Baroque. For a more convincing visualisation, we have to present examples from the late 19th century, in particular, photographs of the pattern stocks of the goldsmiths Aloys Kreiten in Cologne, Hubert Esser in Weert and of the manufacturers Edward Barnard and Sons in London. From these innumerable individual pieces, almost any silver object could be produced, in a kind of building block system.

Next we consider the lead casts in the field of jewellery, concentrating on the 16th and 17th centuries. Often entire jewels' framework exist in lead casts. Occasionally these lead casts have their origin in wooden models. Such models carved in wood are mentioned in the sources also for the jewellery-like gold mounts of rock crystal vessels. Of particular interest is the immediate comparison between the lead patterns and the jewels executed in gold and other precious materials. The Bavarian National Museum owns a lead pattern of the basic framework of a pendant (fig. 6 right) which is cast in a very detailed manner from both sides, front and back. In the Walters Art Gallery in Baltimore, there is a similar but not identical pendant – set with diamonds, rubies and pearls – which is accredited to Southern Germany and dated about the end of the 16th century. Still more striking is the comparison between a lead pattern in the Bavarian National Museum and the corresponding small dress jewel, cast in gold and enamelled and mounted with a ruby and pearls. Today the latter is in Vienna in the Austrian Museum of Applied Arts. The lead pattern represents only the basic form which shows the openings for setting the precious stones and pearls. The surface of the dress jewel cast in gold (after this lead pattern) had to be retouched: the goldsmith – in accordance with his own conception of the final appearance of the jewel – had to trim the gold in some parts so that the enamel of different colours could be applied. Since such lead patterns were a kind of merchandise that could be circulated easily it is extremely difficult to localise the initial pattern – that is to say, the actual invention of the jewel – exactly and to ascribe it to a particular artistic centre.



6. Patterns for two jewels, lead, South Germany, c. 1600, Bavarian National Museum, Munich.

This is also true for the large lead patterns in the Bavarian National Museum, representing the "Schweifwerk" style which seem to be unique (fig. 6 left). These lead patterns, worked thoroughly on both front and back, show a remarkable affinity to the ornament prints of Daniel Mignot who worked in Augsburg in about 1600. Thus the Augsburg origin of these lead patterns seems to be quite probable, but cannot be proved definitely.

Sometimes lead casts belonging to the category of dress accessories are perhaps not actual patterns but reproduction casts such as the unretouched lead cast of a toothpick with the figure of Prudentia from the end of the 16th century in the Bavarian National Museum. This is proved by the existence of a cast silver toothpick, formerly in Berlin, which corresponds exactly to the one in Munich.

Furthermore, lead casts made for documentary purposes, being inexpensive, could also be sent to a client on approval. In 1619, a lead cast of a silver watch in the form of a ring was dispatched to Innsbruck, as is shown from archival sources.

As nearly all the lead patterns for jewellery mentioned are worked very intricately, it seems to be questionable if the

bronze copies which are much less differentiated when compared with the lead casts are actually jewellery patterns. Presumably, they represent particularly solid, durable casts after lead patterns or after existing silver or gold objects. This is demonstrated by the comparison between the very detailed lead patterns in Munich and the rather coarse bronze samples in the Museum of Applied Arts in Cologne. These heavy bronze copies sometimes could also be models for the customer, such as, for example, the gilt bronze pendant in the Victoria and Albert Museum, set with simply mounted rubies and not fully cast on the back.

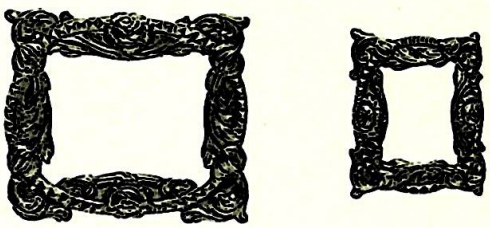
Also we may presume that one of these patterns was the starting point for a fancy pin (in a private collection) made by Louis Wiese after 1890 which obviously is not an interpretation, but more or less a literal copy of the mere framework, without any stones. It was perhaps not by chance that the important jeweller, Eugène Fontenay, published in 1887 one of the "Schweifwerk" lead patterns in the Bavarian National Museum which afterwards were virtually forgotten. That raises the question of whether such metal patterns of the 16th and 17th centuries were re-used in the 19th century.

Besides the lead patterns, there is a second, until now scarcely noticed, category of three-dimensional models (in the sense of patterns) for cast silver and jewellery objects: the base metal relief executed in thin repoussé work from which silver objects are duplicated by the sand casting technique (a procedure which is also described by technical treatises of the 18th century). Among the base metals, copper and brass are generally used as materials for those repoussé worked patterns. They are particularly good for their tensility, are easily worked in the repoussé technique and at the same time they remain very solid. They are therefore well-suited for workshop use over a long period of time.

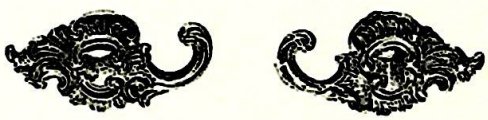
The repoussé worked copper relief of Potentia, in Berlin, is of particular importance. It was created with remarkable virtuosity by Wenzel Jamnitzer for the preparatory work on the silver cast relief figure on the reliquary in the monastery of the Descalzas Reales in Madrid, dated 1570. A typical feature of such repoussé worked patterns is the plain border which surrounds the figure with a kind of large frame. Later on the copper pattern became a collectors' item, as is proved by the nail holes and the gilding.

In the 17th century, copper patterns in repoussé work are frequently to be found, especially in the oeuvre of the goldsmith Hans Peter Oeri working in Zurich between 1663 and 1692. The stock of copper models by Oeri (today in the Swiss National Museum) makes possible a thorough comparison with the works of this master cast in silver and brass. This group of objects seems to be unique in the history of baroque metalwork.

A number of copper patterns worked in the repoussé technique remain from the 18th century. Here we have to deal especially with ornamented repoussé works for making mounts, but also dress accessories. In the 18th century, brass was also frequently used for such patterns, whereas in the 16th and 17th centuries craftsmen obviously preferred copper. The Rijksmuseum in Amsterdam has an important collection of copper patterns in the repoussé technique from the 18th century. There is furthermore a considerable quantity of copper and brass patterns of the 18th century in the Bavarian National Museum which originated mainly in Augsburg. Many samples are connected with the different fittings used for book bindings: in particular edge mountings and clasps which were to be cast in silver. From the beginning of the 18th century, we find a number of flat hammered copper patterns, often re-used copper engraving plates, the surface of which were chased and engraved. Thus the design appears as a positive flat relief, above the sunken chased surface. Furthermore, there are copper clasps, very thinly worked to the repoussé technique, the fine strapwork of which seems to be somewhat later than the pattern mentioned before. A large brass pattern for a bookbinding mount represents another possibility: a thin brass sheet was pierced and afterwards engraved.



7. Pattern for two buckles, brass, South Germany, last quarter of 18th century, Bavarian National Museum, Munich.



8. Patterns for bodice hooks, brass, South Germany, third quarter of 18th century, Bavarian National Museum, Munich.

The category of dress accessories is strongly represented in the Bavarian National Museum. They are executed by silver casting and are taken from patterns in the repoussé technique. There are, for example, numerous patterns for knee and shoe buckles (fig. 7). These are particularly important, since in Germany, unlike in England, such buckles were preserved in considerable quantity only from the end of the 18th century. A further category of accessories is represented by purse-mounts which are symmetrically curved. There is also an especially interesting stock of patterns for bodice hooks in Munich (fig. 8). In addition to several lead casts, which show rather unusual inventions of figural appearance, there are some copper patterns in repoussé work of the third quarter of

the 18th century — a lead cast of these brass patterns made as a kind of workshop record also exists.

We have to determine whether such patterns in copper and brass which are executed in repoussé work, are a speciality only of Germany, Switzerland and the Netherlands, or whether they also exist in other countries. Probably several copper reliefs regarded until now as autonomous creations may also be patterns for metal and especially silver casting. The more intense the examination of the art of the goldsmith and the jeweller, in regard to the question of models and patterns, the deeper the understanding of the practice of the metal workshops which were severely dictated to rationalisation of the artistic production.

Reference: exh.cat. Modell und Ausfuehrung in der Metallkunst. Munich, Bayerisches Nationalmuseum 1989 (Lorenz Seelig with the collaboration of Barbara Hardtwig and Peter Volk). A larger study on the subject is in preparation.