

Tanja Skambraks

*Tally sticks as media of knowledge in the contexts
of medieval economic and administrative history*

Introduction

This paper will present and discuss tally sticks as ubiquitously used objects that played a vital role in medieval and early modern book-keeping, in the administration of goods in trade and agriculture as well as for the public financial sector of some medieval societies. These objects have a very long history as means of quantification, counting and accounting. They were stores of operational knowledge necessary in all spheres of economic life. Furthermore, their long-lasting role as proofs in court highlights their perception as wooden charters – a function that can be traced up to the Code Civil from beginning of the nineteenth century. Tally sticks are modest-looking objects: wooden sticks of varying length carved in different ways and manners. As mentioned, they were used in a wide field of contexts, from agriculture, demesne production and consumption, to the Hanse trade and the tax collection of the English Royal Exchequer.

The first part of this article will discuss some of the specific formal features and the production of those objects. The second part will deal with the functions of tallies in several contexts, linking them to the general themes of this conference asking: how was essential numerical knowledge stored, inscribed and administered? And how did tally sticks work as basic instruments of counting, as wooden charters, as receipts of taxes collected by English sheriffs and as an alternative currency in England? Thirdly, the paper will analyze the relationship between written sources and the objects asking in what ways these two means of documentation and storage of knowledge corresponded and interacted.

Obviously, the topic of knowledge and economic productivity will *not* be approached from the perspective of a history of ideas and concepts, but rather from the perspective of material culture and the practices linked to it. Thus, the paper will contribute to the more general question, how innovations and/or respectively long-term techniques of documentation fostered effectiveness in administration and economic productivity.

Themes and subjects of tally research

The Finnish historian Axel Grandell (Grandell 1982, 1988) described tally sticks in the 1980ies as «forgotten media of culture», pointing to the fact that they are also among the forgotten topics of medieval studies. One reason for this neglect might

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be their dispersed and rather confused state of tradition. The second reason might be their rather ‘dusty’ and perhaps even dull image, since they hitherto appeared mainly in older works on folklore, administration and legal history. However, the wooden sticks deserve a central place in a *longue durée* history of book-keeping, administration and accounting, but also in the history of knowledge. Bernard Berthet (Berthet 1949) first raised this topic in his *enquête* (supervised by Marc Bloch and) published in the *Annales* in 1949 and Jean-Jacques Hémardinquer (Hémardinquer 1963) addressed the use of tallies as an essential human ‘*technique intellectuelles*’. Notching stones or wood is a universal human cultural technique of information storage, ranging from the clay marks and cuneiform clay tablets of Mesopotamia, to the ostraca of the Egyptians, into the modern period. Numerous pieces of evidence have also been preserved from medieval times, showing the widespread use of the sticks for manifold purposes, like calculating quantities of goods, services, duties and rights, and later money.

More recently, tally sticks and their widespread use in most of Europe were contextualized by Michael Clanchy in his book *From memory to written record* (Clanchy 1979), Axel Grandell (Grandell 1982; 1988) as well as by Ludolf Kuchenbuch (Kuchenbuch 1999; 2002) and Moritz Wedell (Wedell 2011). All of these authors emphasized the potential of these objects not only for the social and economic history of the middle ages, but also for the history of writing and numerical knowledge from an anthropological perspective. Whereas Clanchy described tally sticks as objects marking one of various stages of information storage on the way from non-written society to writing, I would instead follow Wedell and like to propose an interpretation of the tally sticks as para-literary media accompanying and complementing written documents. If one compares, for example, the form of tallies, tally bills and the entries in the English Pipe Rolls, we can see the successful adoption of a reduced, formalized and abstracted way of documenting administrative data that seems to be directly linked to the pragmatic use of writing space and essential knowledge about the King’s income.

Hence, the application of tally sticks very often paralleled the usage of written documents. The ongoing use of both materials clearly shows that the increased employment of parchment and paper in the middle ages did not lead to the disappearance of older forms of documentation. This duality of written and nonwritten information storage is a fascinating feature of the history of medieval book-keeping and administration and provokes further questions about the role of literacy in processes we would call ‘cultural development’. The English anthropologist Jack Goody challenged the supposedly essential role of the written word in his book *The domestication of the savage mind* (Goody 1977), suggesting that in non-literate cultures oral complexity was often reduced to graphic simplicity. In doing so, he ultimately questions the presumed causality between writing, abstraction and cognition as the only means of knowledge creation. Especially in administrative contexts, the use of reduced sign language seems to have been functionally sufficient. Along this line of research, i.e. in a trans-cultural and trans-epochal perspective, tally sticks can be interpreted alongside any form of sign language or material objects that contain numerical and even narrative information, such as the Inca *kiphus* (Urton 2003;

Hyland 2017, 2019) or tally finds from Bactra from the Achaemenid Empire (Henkelman and Folmer 2016).

Hence, the history of accounting did not begin in Europe, and certainly not with individuals like Luca Pacioli. Instead, work from the prehistory of the Middle East and Africa (Sy and Tinker 2006) provides ample evidence for the existence of techniques and media of (ac)counting long before European history ‘began’.

Beside anthropology, historical semantics has also dealt with writing and cognition. Commenting on their value as sources for the history of communication and ritual, Wedell writes that Tallies «do not function in a purely message (i.e. semiotic) way, but inherit ritual (i.e. performative) properties» (Wedell 2011, 258). Interestingly, he emphasizes not only their role as a para-literary media, but also their associated agency in the context of the accounting process as a ritual. Thus, tally sticks can become research objects in an administrative and legal history framed by the approach of ritual studies and material culture.

Finally, the history of calculation and numbers (Menninger 1992 (1969); Ifrah 1981) conceived of the number signs on the sticks as primitive numerals and thus as part of a general culture for ordering and grouping, especially in rural communities. They served above all to store partial and final results and thus enabled the complete traceability of a particular calculation. The transparency of calculations was the basis for streamlining administrative practices, including the quantification and categorization of entities. In a kind of logical continuation, institutional economics has also dealt with the role of tally sticks. In one study of common property management in 17th century Sweden, Per Forsberg (Forsberg 2018) has interpreted tallies as technical media facilitating the management of the commons and consequently the ability of rural societies for self-governance. He shows, that as debt records and documents of individual as well as common obligations and rights, tally sticks became mediators for social relations, decision-making and transparency in Swedish village communities. Counting and accounting techniques are seen here as a fundamental skill of economic actors that enforce mutual cooperation and ultimately stabilize social relations. Considering all these approaches, the role of the modest tally sticks for the grand narratives of economic history becomes obvious.

1. Forms and types of tallies

By way of definition, tallies were wooden sticks of varying lengths that used cuts and notches to document numerical information in different contexts, such as debts, taxes, traded goods and agricultural services and production. Beside notches, we sometimes see inscriptions providing additional information on dates, places and actors as well as reasons for the payments. Tally sticks appear in a considerable variety of forms and functions, as these illustrations demonstrate.

Fig. 1. Various types of tallies (depicted in Grandell 1988, 50, 95, 127, 144) and one Exchequer Tally (from 1294, NA, E 402/1 (photo by the author))



The formal and functional diversity of tallies is striking, ranging from Swiss lot pieces (Gmür 1991 (1917)), simple and bipartite sticks used for cargo in Bryggen/Bergen and Novgorod (Kovalev 2000; 2007), both important centres of the Hanse trade, to the elaborate Exchequer tallies (Jenkinson 1911; 1924). Even tripartite tallies (for instance in the so called fork-form) exist, showing the involvement of three parties in one transaction (Grandell 1982: 95; Menninger 1992 (1969), 231).

Beside their haptic qualities as tangible proofs of legal and power relations, tallies were most useful, because they could be used by illiterate people as well. Furthermore, they were much cheaper than parchment or paper. The main advantage of tallies was their safety against fraud, because each bipartite tally was a unique piece of wood split after notching into two parts, the stock and the foil. The stock was kept by the payee, the foil by the payer. Therefore, they can be interpreted as a sort of wooden charter, proving the authenticity of a transaction. Unsigned, they were – in some contexts – transferable from one person to another. In the case of medieval England, they even developed into a form of promissory note, cheque and money substitute, as will be shown later.

1.1 English Exchequer and private tallies

Not only do we know tally sticks from England that point to an elaborate centralized administrative practice of the crown in the high middle ages, we can also trace their long history until the early 19th century. The example of England illustrates the functionality of these instruments on many levels particularly well. Their use is best documented for the English treasury, the Exchequer, certainly since the 12th century, very probably earlier. In England, tallies were still used as tax receipts

until the 19th century, although a system of documentation fully based on writing had long been practiced. It was not until 1826 that the English government decided to abolish these accounting instruments, which then were considered obsolete. This quotation from Charles Dickens vividly illustrates the 19th century attitude to pre-modernity:

What was to be done with such worn-out, worm-eaten rotten bits of wood, which ages ago a savage mode of keeping accounts had introduced into the Exchequer? (Dickens, *Speeches*, ed. Fielding 1960, 204f.).

The course of this fatal decision is well known: The burning of millions of dry tallies famously set on fire the Houses of Parliament, as depicted by William Turner.

So, what is left then for historians? In 1910 a box was found in the in ‘Chapel of the Pyx’ in Westminster Abbey, containing a number of tallies from the thirteenth and fourteenth century AD. These finds were first described by the English archivist Hilary Jenkinson at the beginning of the 20th century, who distinguished two main types (Jenkinson 1911): the Exchequer tallies and so called ‘private tallies’, which closely resembled those of the Exchequer in their form. On the basis of these remains, which consist of ca. 400 pieces, as well as the parallel written tradition, the following contexts of function and use can be deduced.

The Exchequer tallies came into being in the course of the annual settlements and accounting of the royal tax revenues. The sheriffs’ accounting procedure took place twice a year at Easter and Michaelmas at the Exchequer in Westminster. As tax collectors, the sheriffs were held personally responsible for the payment of several taxes and duties, for which they were issued tally sticks as receipts for payments made or still outstanding.

Fig. 2. Exchequer tally from 1294, NA, E 402/1 (photo by the author)



They contain a range of information, such as the names of the respective official and the county, the year of accounting, the accounting date as well as the type of deposit and, of course, the amount of money paid in form of notches in the wood.

The most striking feature is that these notches are cut in a specific way, already described in 1170 by the King's treasurer Richard of Ely in his famous treatise on the work of the Exchequer, the *Dialogus scaccarium*. There we read about the precise assignment of certain values and notches:

The method of cutting is as follows. A thousand pounds are shown by a cut at the top of the tally wide enough to hold the thickness of the palm of the hand, a hundred that of the thumb, twenty pounds that of the little finger, a pound that of a swelling barleycorn, a shilling smaller, but enough for the two cuts to make a small notch. A penny is indicated by a single cut without removing any of the wood (Richard of Ely, *Dialogus*, ed. Johnson et al. 1983: 23).

The accounting process could take several days and was highly ritualized. The accounting took the form of a court case or a game of chess, as Richard of Ely described it. The sheriff sat on one side of the table and the treasurer as his 'opponent' on the other side. The sheriff had to defend himself by supplying the necessary tax sums for which he was personally liable. He remained the king's debtor as long as sums had to be paid in. After he had deposited the money (in coins) with the lower treasury, it was weighed, tested for its metal content and stored in canvas or leather bags.

Fig. 3. Convolute of tallies, related written documents and canvas bag (Jenkinson 1924: plate LXV)

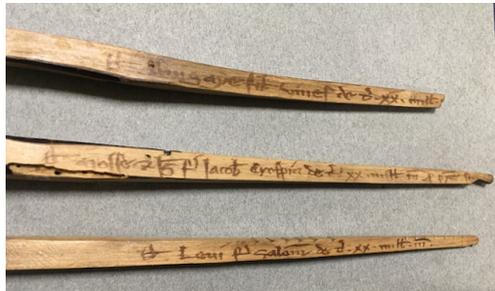


PRIVATE TALLIES, STOCKS AND FORLS
with annex bag, also three sets of rolls of accounts. 14th cent.
Sheet 1

Then a tally stick was carved and taken to the upper treasury. There, after the hearing, the sheriff received the tally as a receipt. Simultaneously, the incoming amounts were written in the receipt rolls, the famous Pipe Rolls. These books also recorded the sums of money that were still missing. Tally sticks were thus used alongside written documents. Their tactile quality and their character as take-away receipts and evidence of the accounting ‘trial’ made them indispensable items alongside the rolls. A ritual character can be attributed to the accounting procedure itself, which increased the value of those sticks not only as an instrument for quantifying and storing information, but – beyond that – as a symbol of a social relationship and personal commitment, produced by a financial transaction. Tally sticks were also issued as promissory notes instead of cash, for example for goods purchased for the king’s wardrobe.

The English National Archives also hold a series of Jewish tallies, which document the payments of *tallage* and taxes on chattels of the Jewish communities under Richard II. Interesting features are the Hebrew script and the varying quality of the wooden sticks depending on the amounts paid. It is noteworthy, for example, that sturdier, thicker woods were used for higher amounts over 25 pounds, while thin woods were notched for lower amounts.

Fig. 4. Three Jewish tallies (thirteenth century), NA, E402/2
(photo by the author)



As mentioned earlier, the use of tallies was not limited to royal administration, but was also a widespread practice in business between private persons. Looking at transcriptions of writings on private tallies, we see that they were used for different purposes by nobles, communities and citizens alike. The private use of tallies is far more varied, as the types of payments mentioned on the sticks prove. Thus, they appear for transactions of credits and goods, between individuals, villages and guilds, to the trading horses and solving family-related problems.

Examples:

1. *Whathamsted. Tallia Roberti Bernereve ibidem de frumento tam dominici quam decimarum ab eo recepto post festum Michaelis anno vij.* (1278)

2. *Contra Philippum Harneys et Thomam Aylred de denariis sibi liberatis de*

sexta domino Regi in villa...(lower edge: *ad constructionem galie eiusdem domini Regis ibidem*) (1294)

3. *Contra Johannem de Leycestria de Ebor' pro xiiij. sextariis vini* (1305)

4. *Contra Hugonem de Litton et socios suos de Mina ab eis recepta ix. die Marcii ano decimo* (on lower edge: *x. lad' disc albe*) (1316)

Furthermore, these objects are evidence for the transregional adaptation of an obviously effective technique of bookkeeping all over England. One interesting question yet to be solved is if the local administrators, the sheriffs, and other royal officers were the only original promoters of tally use or if other groups, like merchants, traders, craftsmen or peasants also played a role in spreading and implementing this practice.

2. Contexts of use

2.1 Manorial administration and husbandry

Although we are well informed about the use of tallies at the English royal court by the surviving objects as well as the *Dialogus*, rather little is known about other contexts of tally use. Therefore, the analysis of their use as mentioned in contemporary written sources is instructive. Here, extracts from three contemporary didactic treatises on husbandry and household administration will be presented, all of them stemming from the thirteenth century. These texts were very likely written by and for professional administrators working for noble households. They deal with the administration of landed property and livestock as well as what we would call today 'good leadership' from a very pragmatic and realistic perspective (see Oschinsky 1971, *passim*). The first example comes from the anonymous *Husbandrie* (*Hosbondrie*) about the office of the bailiff (reeve). The *Hosbondrie's* passage concerning the office of the reeve, who was responsible for the land and its yield, reads as follows:

And the reeve ought not to sell or buy, receive or deliver anything unless by tally and good witness (*Hosbondrie*, ed. Oschinsky 1971, 441).

Here, in contexts of trade, buying and selling, tallies were used as receipts. Another passage from the same text describes the procedure of administering the quantities of threshed grain after the harvest:

[...] And if there are stacks outside the grange then he ought to have them measured by foot or by rod – the width and the length and the height—when he is about to thresh. And he ought to tally every stack by itself, in that way he will be able to assess the yield of the corn equally well for every stack inside as well as outside the grange. [...] And although he may sell his corn in

gross it is advisable that he has one of his own men tally and check the contents of each stack inside and out [...] (Hosbondrie, ed. Oschinsky 1971, 421)

Here the tallies mark the quantities of haystacks as part of the threshing process. Although we actually do not know much about the degree of literacy of the reeves and servants using them, it is clear that their use did not necessarily require knowledge of reading and writing. On the other hand, the tallies could be interpreted as evidence for the existence and work of a little-known group of medieval *laici literati*, including a number of literate and legally trained professionals – we could call the administrative elite of the realm – without any clerical background. (Oschinsky 1971, 62)

Similar to manorial administration as described in the ‘Hosbondrie’, tallies were used for the documentation of correct measurements of grain and hay as described in the treatise called ‘Senechaucy’:

c.39: No heaped measures ought to be taken from the grange into the garner to account for the ‘increment’ but with every eighth quarters – in levelled measures – a ninth should be taken from the stackers for ‘increment’ (that is to equate the standard measure used at the garner with the larger local one used at the grange). No bushel, half bushel, or cantle should be handed over to the reeve from the threshers over and above the foresaid measure. The heaped measures and the bushels, half bushels, and cantles and any odd amounts which enter the garner without tally or number bring the lord little profit. (Senechaucy, ed. Oschinsky 1971, 277)

c.40: Seed-corn left over in the fields after sowing and returned to the garner ought not to be measured or tallied a second time; and the bailiff ought to take care that the lord suffers no loss through the reeve or anybody else on account of returned seed or the use of heaped measures, or any half bushels, or cantles taken into the garner, because these malpractices are common. (Senechaucy, ed. Oschinsky 1971, 277).

The avoidance of any loss by unequal and unprecise measurements of harvests – or in other words: the control and maximization of profit or economic growth on a microlevel – can be ascribed one essential goal of these regulations.

A third example shows the use of tally sticks in a noble household. Around 1240, Robert Grosseteste, the Bishop of Lincoln wrote a treatise on household management for the countess of Lincoln, Margaret Lacy, after the death of her husband. Regarding the management of grain stocks, Grosseteste advised the countess to improve control of the income and harvest by the use of tally sticks.

And then send one of your faithful household servants or valets who is to take with him the reeve of that place and another faithful man of that town-

ship. And these three men ought to be present at all times, at the opening and closing of the granges, at the threshing, the winnowing, and at the transfer of the corn out of the grange – by tally – into the garner. And take care that no servant or bailiff receive the money of the sale of produce but only the reeve and another, who jointly will be responsible for it. (Household Rules of Robert Grosseteste, ed. Oschinsky 1971, 395).

Beside treatises on accounting and bookkeeping in noble households, monastic houses also used tallies for the administration of their estates, as sources from the cathedrals of Gloucester and Durham show. These extracts from their respective treatises on accounting show tally use as part of the account by the bailiff:

Tunc clericus tradet preposito vel ballio baculum in quo ponet recepta ex una parte et deliberaciones ex altera; aut debet docere ipsum ut sciat facere talliam vel aliquod signum [curie calculatie in granario] vel alibi ut de receptis et deliberationibus secure possit irrotulare. Et sic semper erit ille prepositus in bono statu et in arrearagiis non cadet.

Translation:

Then the cleric hands to the reeve or bailiff the tally stick on which he inscribes the receipts as well as the expenses. He also should teach him how to cut the tallies and other signs (from the accounting of the granary) or otherwise how he can write all receipts and expenses securely in the roll. Thus, the reeve will always have a good standing and will not fall into debts (arrearages).

As in noble households and husbandry, the tallies are used as a tool requiring specific knowledge of how the notches are carved (*aliquod signum curie calculatie in granario*) to store all relevant information of expenses and income of the monastery. Knowledge should be transferred by a cleric to the administrators. The income and expenses are thus carved by the bailiff respectively the reeve on either side of a tally stick. Furthermore, we learn that the information stored on the tally will then be transferred to the ‘rotuli’, i.e. the written account rolls. Hence in the case of clerical and monastical administration as in the other cases presented, tallies as para-literary documents helped to guarantee effective and successful bookkeeping.

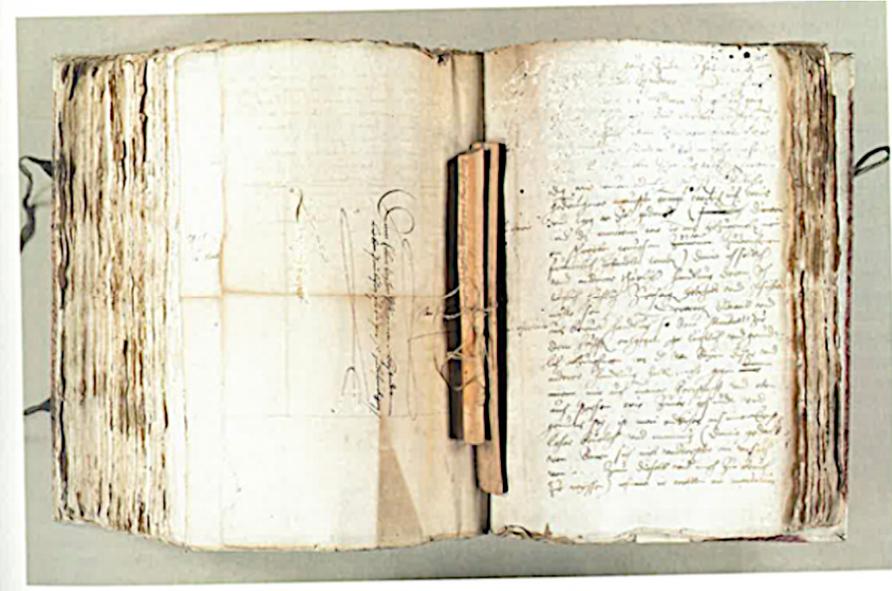
The examples presented here show that medieval didactic literature on manorial administration points out very clearly the importance of tally sticks as wooden documents of control and memory alongside written bookkeeping. They were used by literate and illiterate officers involved in the control of the distribution and acquisition of resources in the context of manorial economy throughout the realm.

2.2 Tallies as evidence in court

Examples of the use of tally sticks as evidence in court draw attention to the European tradition. Here we leave England for one moment. The preservation of

tally sticks together with accounts can be shown by the example of the account book of a German nobleman from 1557. This account book documents the debts of count Ladislaus von Fraunberg, who owed small sums to a baker and a butcher from Landshut. The count's creditors had sent in two tally sticks as proof of the outstanding money for consumption. In this case, they were handed over to verify the creditors' claims. Whether this was possibly done in court is not known (Lies 2000, 133).

Fig. 5. Account book and tallies of count Ladislaus von Fraunberg, 1557

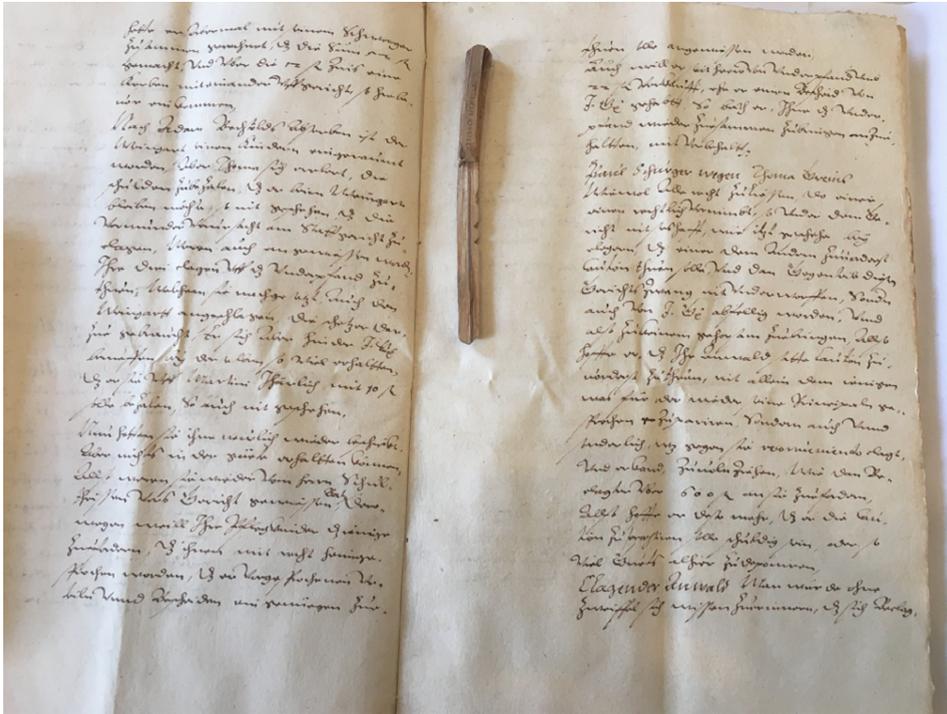


Source: Bayrisches Hauptstaatsarchiv, Kurbayern Äußeres Archiv 544, nach Blatt 314 (Schrift-Stücke 2000, 133)

Another example comes from the court protocols of the south western former county of Wertheim, close to Würzburg. Preserved in the State Archive of Wertheim these sources contain several documents including tallies from court cases, for example one from the year 1609 dealing with a court case involving income drawn from a vineyard.¹ The case that began in 1595 and lasted until 1609, dealt with the request made by the guardians in the interest of the children of late Adam Bechthold from the village of Ebenheid. The defendant Thomas Grein owed a sum of 12 guilders connected to the vineyard to the late Adam Bechthold. The acta contain a small tally stick with 12 carvings signifying the mentioned 12 shillings. Obviously both parties had made a contracts about a debt or rent from the vineyard which they had fixed in the form of a wooden stick.

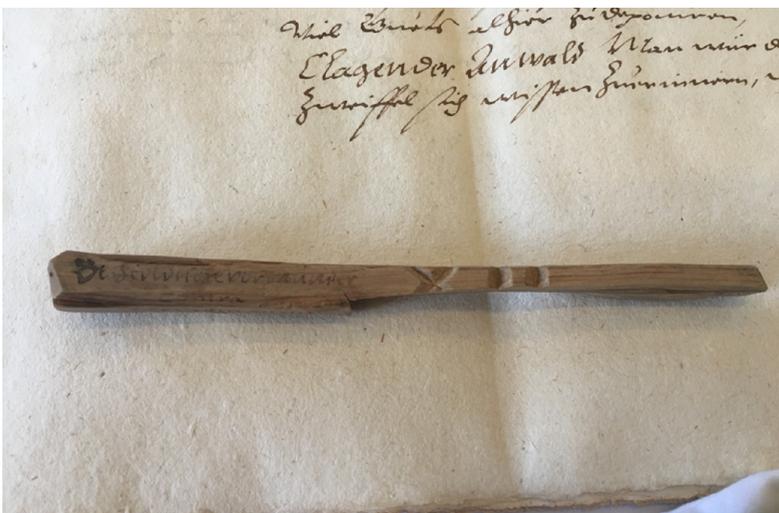
¹ Staatsarchiv Wertheim, Bronnbach, G-Rep 102 Nr. 1657.

Fig. 6. Tally as proof in the court protocols of the county of Wertheim



Source: State Archive Wertheim, G-Rep 102 Nr. 1657.

Fig. 7. Detail of the same tally



Further written evidence is available for German village courts of the 15th and 16th centuries, for example, in the so called Haderbücher from Ingelheim² mentioning them being brought before the judges by the villagers. Here is an example from the court protocols of Nieder-Ingelheim dated 9.6.1469:

Hans Blanck, the baker of Ingelheim, has accused Godfart the miller of having given him bread for 22 albus each, according to the tally stick, where there is a notch for each loaf; also for 3 shillings without notches. That he did not give him the money, or acknowledges it, would cost him 4 guilders. And if he should say no to this, he would prove it to him by the tally stick. Godfart then says: He has worked off the 22 Albus. And if he accuses him further, he is innocent. The innocence is fixed for 14 days. They both had that recorded.³

In this case the notched wood is presented in court as evidence of bread delivered, the number of notches being equal to the number of loaves, as is pointed out. The outstanding amount of 4 guilders is claimed from the baker Hans Blank. The defendant, a miller, stressed that he had worked off the debt.

The fact that also in village communities tallies had a function as currency is pointed out by the next example from the Haderbuch of Ober-Ingelheim from 30.9.1480. It concerns a debt that was settled by means of cash and tally:

Peter Schnade says: After he was recently sentenced to give account to Karl and Jeckel von Simmern, that is what he did. Now they were not satisfied with his account. Therefore, he refers to the brother and brother-in-law of the deceased Hans von Klee, who were present, that he delivered things to the said Hans and settled accounts with tallies and in other ways for 11 florins. And he deposited 6 guilders with the court. The aforementioned Karl and Jeckel took these against account without giving up their legal claim.⁴

The use of tallies as proof in cases of conflicts settled in courts continued throughout the centuries. In the Basel city book, tallies are still cited as legal evidence in the 18th century. And even the Code Civil (chapter 1333) still mentions the inconspicuous sticks as evidence. In addition to their role as document-like evidence in court, tally sticks advanced to become a substitute currency in England in the middle ages, thus opening up the field of pre-modern monetary and financial

² With numerous examples: Ingelheimer Haderbücher Online, URL: <http://www.haderbücher.de>

³ Nieder-Ingelheimer Haderbuch 1468-1485, Bl. 045, in: Ingelheimer Haderbücher Online, URL: <https://www.haderbuecher.de/baende/1468-1485-nieder-ingelheim/blatt/band-2-ni-1468-1485-bl-045/pagination/4/> (last seen 03.02.2021)

⁴ Ober-Ingelheimer Haderbuch 1476-1484, Bl. 157, in: Ingelheimer Haderbücher Online, URL: <https://www.haderbuecher.de/baende/1476-1485-ober-ingelheim/blatt/band-5-gw-1490-1501-bl-157/pagination/14/?L=0&cHash=768f7f0559f12795082bb72d3ea2c62e> (last seen 09.02.2021)

history from the material-historical side as well, as will be shown in the following chapter.

2.3 Tally sticks as substitute for money

Tally sticks were not only tax receipts of the English Exchequer, they also played an important role as money substitute under the Plantagenet kings of the 13th and 14th centuries where they became an innovative instrument of public credit. In her monograph on English monetary history, Christine Desan traced the role of the sticks from the 12th to the 17th century and convincingly showed that they were issued by the Crown as a promise to pay (anticipation tally) like a cheque. The Crown itself acted as guarantor for this innovative form of payment order as it ensured the liquidity of money and thus the redeemability of the tallies through the continuous tax revenues. One advantage of this developing system was, of course, its independence from the still scarce coinage, in times of economic protectionism under Edward II.

How exactly this system of money orders worked has been outlined by Tony Moore in an essay (Moore 2013) on the basis of the entries in the entry rolls and the issue rolls of the treasury from the reigns of Edward I to Richard II. Accordingly, tallies were no longer issued as receipts for deposited cash sums, but were issued directly to the king's creditors for redemption with various officials in the realm. Thus, for example, an Italian banker in the 14th century could reclaim the credit sum lent to the crown directly from the collectors of royal revenues (taxes, church tithe, customs, etc.) by presenting the tally sticks. In addition, they were used as securities in secondary markets, for instance as pawns for the private loans of businessmen. Moore cites the impressive example of the financier Paul de Montefiore, who in 1343 redeemed 72 tallies totalling £7000 (which was actually to be used to redeem the king's pledged great crown) with various London financiers. Notable is the sharp decline in value. Montefiore was paid only several small sums of money for the originally valuable sticks. The state-secured securities were thus also used as collateral for private credit interests. One consequence of this development was that the treasury handled fewer and fewer cash transactions in comparison to the cashless capital transactions made possible by the tally sticks. In 1375, 30% of the Crown's revenue (£51,155 out of 165,845) was cleared in the form of tally sticks. This proportion increased even more; by the middle of the 15th century it counted for 60%. More sticks were notched and issued than coins were minted.

As a state security promoted and used by the government, tallies circulated in England's fiscal infrastructure for centuries. They were distinctive in form, fraud-proof and quite durable. By issuing them, the government controlled the number of tallies in circulation and at the same time guaranteed their redeemability, thus keeping them in demand. On the other hand, they were sometimes threatened by a sharp decline in value (up to 25%) and sale for other purposes, which not only weakened the royal finances and restricted the flow of cash to the treasury, but also signified a decentralization of the royal financial apparatus.

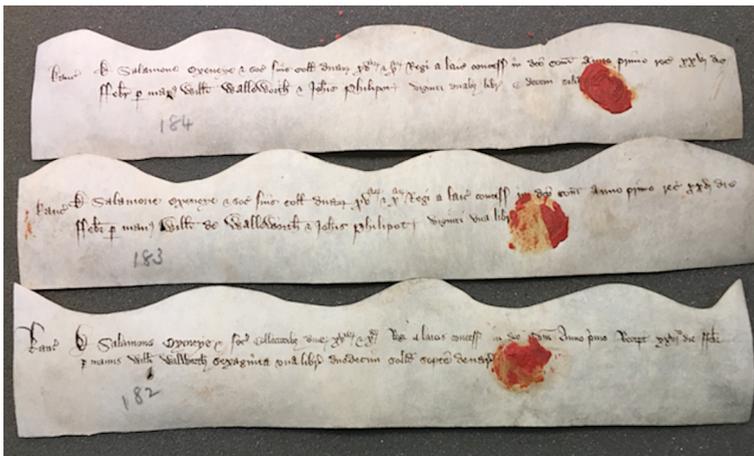
The 15th century shows an increasing regulation of the use of tally sticks as well as restrictions concerning speculation. However, they remained in use as a means of payment and credit until the 17th century. The political and constitutional instability of 17th century Britain (constitutional warfare) weakened the existing system of royal credit and led to the replacement of tallies by other forms of credit instruments, such as bills of exchange, notes and letters. This brief account shows the close connection between credit and monetary history and political control. Furthermore, one could state that the usage of tallies fostered economic growth in times of economic protectionism. The functional innovations presented here, point out the striving of political leaders for economic stability and growth and add new dimensions to the history of the tally sticks. Thus, part of their ‘hidden history’ becomes visible.

3. Tally sticks and written documents

3. 1 From wooden stick to parchment? Tally bills

In order to better understand the function and use of tally sticks, and in particular their relationship to written records, we need to take a closer look at their specific context of tradition. In some cases, tallies have survived together with written sources. Jenkinson for instance mentioned the impressive examples of private tallies together with parchment labels and slips of paper in linen sacks or leather bags.

Fig. 8. Sealed tally bills (chirographs) documenting taxes collected by the sheriffs, NA, Tally bills (E 402 /4-33) (photo by the author)



As mentioned above, tally sticks often were not used on their own, but were – especially, but not only in England – important components of a complex accounting system involving written administration as well. From the 14th century onwards,

tally bills in the form of chirographs (split charters) have survived as written forms that were directly related to the tally sticks, as they contain the same information about people paying taxes and fees.

Here, the splitting of the wood is replaced by the cutting of the charter in a very specific way, which allows for proof of authenticity. In addition to this technique, the notes were stamped with the seal of the Crown. The bills were usually written in Latin, but in the NA's holdings there is also one example in French from the time of Richard II.

Most interestingly, the outline of the bills closely follows the one of the wooden sticks. The same sort of information is provided in the same order and outline, including the names of the sheriffs or bailiffs as well as of the payer, the date of collection and of course the sum collected. A closer look revealed that they seem to have been prepared as formulae and subsequently filled in. Hence, an interesting feature of tally bills is their possible classification between charter and pragmatic writing. The red seal and its chirographic exterior clearly refer to a formalized charter, the holes in the parchments point to pragmatic administrative writing that was carried along or otherwise tied in masses on a thread.

3.2 Linked semiotics: Written documents and carved tallies as complements

As became obvious in the aforementioned examples of tax and manorial administration as well as legal courts, there remain some examples illustrating tally use in agricultural production and consumption. Again, we can turn to sources from early modern southern Germany. The State Archive of Ludwigsburg holds 17 tally sticks from the 17th century.

Some of these are wrapped in paper snaps with written information about the goods' quantities documented on the sticks. Only the paper snaps enable to decipher the wooden sticks, containing notches but no writing. They for instance show us the practice of accounting everyday consumption of beer and wine and the tax (*ungeld*) paid for this comestibles. This information is provided by the paper note in which three tallies are wrapped.

Fig. 9. Different tally sticks from the late 16th and early 17th century in the State /
Kleine Holzurkunden aus dem Limpurg-Gaildorfischen Erbschenkarchiv (1605,
1654-16636, 1692) (photo by the author)



Source: Archive of Ludwigsburg, B 114 Bü 10197.

Fig. 10. Writ documenting the payments of *Ungeld*, StA Ludwigsburg, B 114 Bü
10197 (photo by the author)

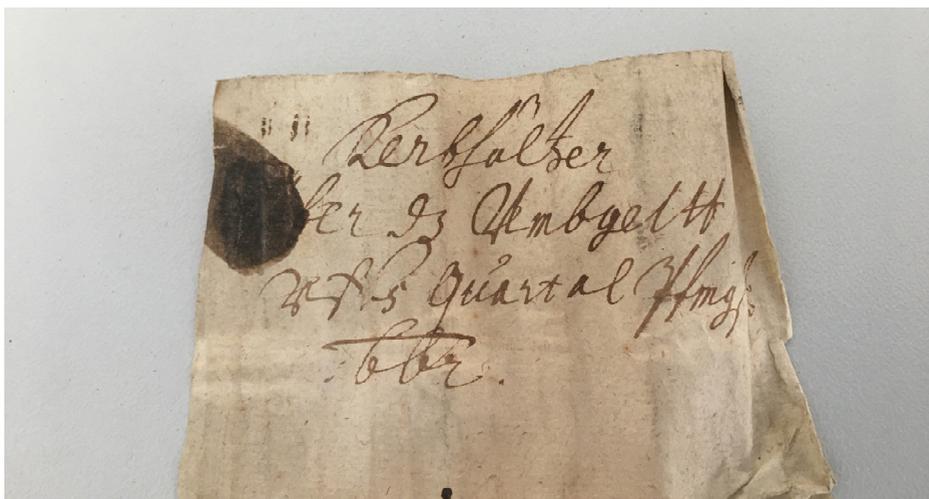
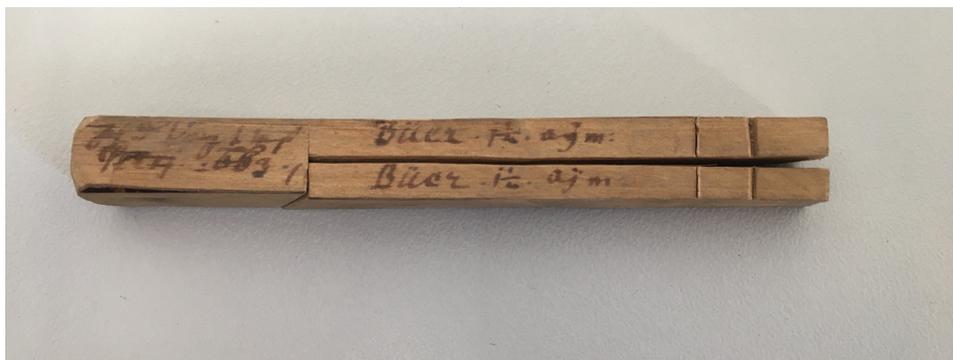


Fig. 11. Three bipartite tallies about Ugeld paid for beer and wine, B 114 Bü 10197 (photo by the author)



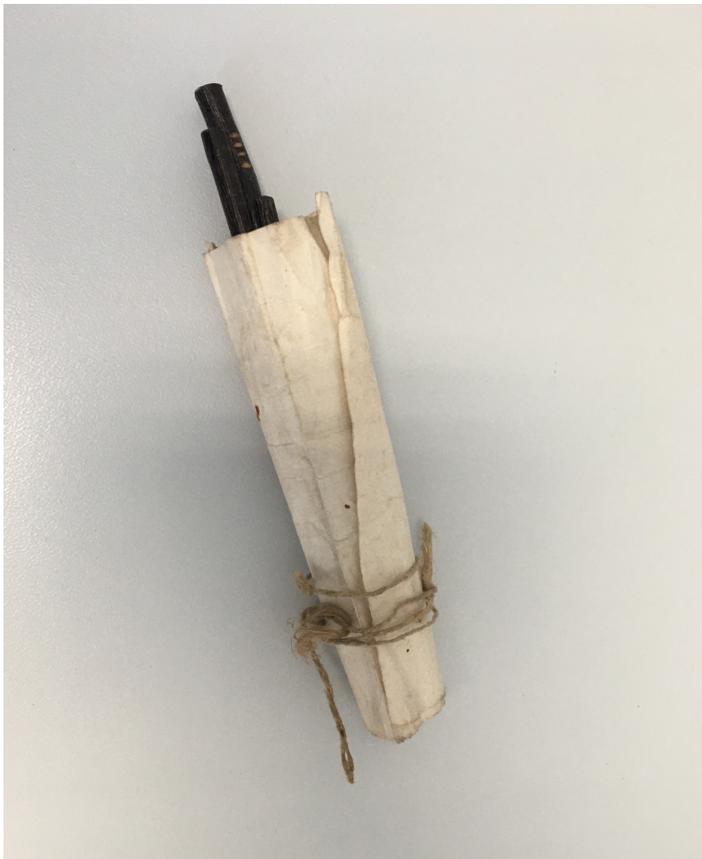
Fig. 12. Bipartite tally relating to Hans Vogt, who paid the Ugeld for one and a half buckets of beer in 1663, B 114 Bü 10197 (photo by the author)



This bipartite tally stick documents the amount of beer consumed in the second quarter (Petri-Quartal) of 1663 by a certain person, namely one and a half buckets (1 *eimer* contained between 60 and 300 liter) as well as the name of the tax payer: H. Vogt. Both, the wood and the paper slip mark the date of accounting, but the tally marked the important information, the amount of beer for both sides.

The last example from the early modern Swabia points to an elementary problem of dealing with tallies that contain no scripture: the dependance on written documents for the interpretation or the lack of context. Looking at these tally sticks, the problem becomes clear.

Fig. 13. Bundle of tallies wrapped in paper, B 114 Bü 10197 (photo by the author)

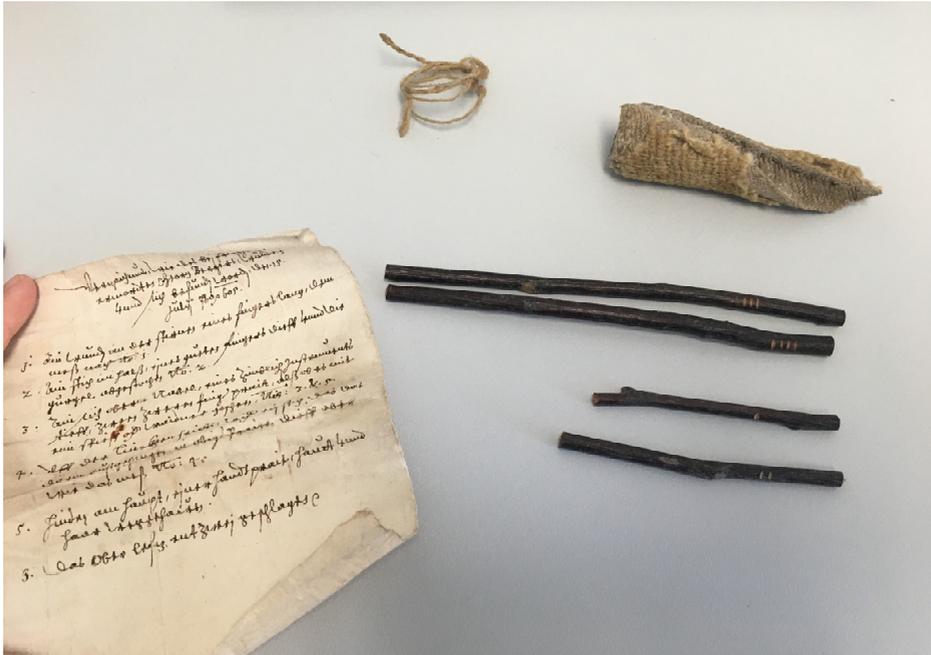


Alone these sticks⁵ would yield no information beside a certain quantity expressed by the notches. Only thanks to the paper wrapping as a complementary document, we learn that these wooden sticks count agricultural produce. The obvi-

⁵ Staatsarchiv Ludwigsburg, B114 Bü 10197.

ous interdependence between writing and carving proves the practice of using both media as information stores, that cannot or only partly be read without each other.

Fig. 14. The contents of the bundle, consisting of four tallies, one piece of cloth, a string and a written document, B 114 Bü 10197 (photo by the author)



Conclusion

This paper intended to introduce readers to the broad spectrum of uses and the manifold possibilities for investigating tallies, the forgotten ‘media of culture’, as Axel Grandell put it. The analysis also aimed at offering new perspectives on the economic growth and productivity by approaching the important, but yet understudied aspects of material culture and the history of knowledge. Tally sticks were used in a various contexts, simple and elaborate: as payment receipts, as markers for quantities of agricultural produce and consumables, as quasi-charters and evidence in court as well as money substitutes. The English Exchequer provides a unique picture of a sophisticated accounting system involving a class of literate laymen as financial management professionals.

In terms of their formal characteristics – the length, shape and type of carvings and the specific cuts of the wood – studies of European medieval tallies probe their great diversity, which makes it even more complicated to infer their function from their form. Therefore, the interpretation of tallies as archaeological finds can only

be done in their context of transmission and a strictly comparative method must be applied. Hence, the study of tallies should involve cooperative work of historians and archeologists.

The history of signs and written culture also offers a fascinating field of research. Tallies should not be interpreted as objects *prior* to writing, but as paraliterary objects accompanying the practice of writing. Writing and carving were two different but related and often interdependent techniques of information storage in the middle ages. Their use throughout Europe lasted until the early 20th century. The *longue durée* of the history of tallies can be seen as evidence of their usefulness and integrability in accounting and administrative practices based on the advantage of cheap, easily transportable material, their independence from the literacy level of their users, and their resistance to fraud.

Concluding on the role of tallies for general economic growth and productivity, this paper pointed to four different contexts of tally use: bookkeeping as a vital part of an effective administration; as proofs in court and quasi-charters providing legal security of economic transactions; as an ubiquitous tool in the manorial administration to count and store grain and livestock and guarantee control over quantities of goods and labour services in partly illiterate communities, and finally as money substitute in times of coin shortage and protectionism as mean to secure the flow of capital in England in the 14th and 15th century. Thus the study of these objects might well contribute to and enrich some of the great fields and narratives of social and economic history. However, the narrative of this long history and the exploration of these fascinating objects in a broader, geographical, methodological and disciplinary comparative perspective has yet to be written.

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