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Names and Things: Latin and German Mining Terminology in Georgius Agricola's *Bermannus**

The natural sciences of the early and mid-sixteenth century are characterised, on the one hand, by a thorough study of ancient texts that were partly re-discovered and often translated for the first time from Greek into Latin; and on the other hand, by the diligent observation of natural phenomena and objects. These two sources of knowledge – the ancient texts and the observation of nature – were at times hard to combine. Be it, that there was no word to describe a newly found phenomenon or object, or that there was an item mentioned in an ancient text that had become unknown. Moreover, the inherited texts often conflicted with new observations that proved the ancient sources to be incomplete or simply wrong. Georgius Agricola's dialogue *Bermannus* on mining and minerals (*res metallica*) provides an insight into how these challenges were perceived and addressed in the first half of the sixteenth century.¹

After a short overview of Agricola's life and the content of the *Bermannus*, this article will discuss the problem of connecting *res* and *verba* that was perceived, as Agricola's introduction to the dialogue shows, as a crucial challenge of early modern medicine, and motivated Agricola to write the *Bermannus*. While this difficulty was also addressed by other authors and in a variety of disciplines, it is a special feature of the *Bermannus* that it does not only deal with Latin, Greek, and Arabic words, but also with a (mostly oral) German terminology of mining operations and minerals. Although this is not highlighted by Agricola and his contemporary readers, it is Agricola's rendering of German terms into Latin that is most inventive and peculiar. This article therefore focusses on different strategies used by Agricola as he tried to translate German terms into Latin while retaining the concepts behind them.

Overview of life and work

Georgius Agricola (Georg Pauer/Bauer) was born in 1494 in Glauchau and died in 1555 in Chemnitz. He was a physician and humanist, but is best known for his ground-breaking works in the fields of mining and mineralogy.² The *Bermannus* was Agricola's first work on earth sciences. It is a dialogue set in St. Joachimsthal (now Jáchymov in the Czech Republic) in the Ore Mountains where Agricola lived and worked as physician and pharmacist

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¹ See, e.g., Goltz 1972, 354–356; Morello 1994, 74–76; Norris 2015, 8.

² See, e.g., Engewald 1994; Naumann 2007 on Georgius Agricola and his work.

for three years (1527–1530).³ Agricola's main aim in the dialogue was to find and identify the ores and minerals mentioned in ancient texts in order to make use of this knowledge for medical practice (p. 14⁴).⁵

The style of the dialogue is Platonic in the sense that the conversation is quite lively and the statements of the collocutors are rather short and at times witty,⁶ yet Agricola starts with an introduction to his topic like in a Ciceronian dialogue. Latin dialogues were a popular literary genre in the time of humanism, because they offered the opportunity to discuss different theories without having to come to a conclusion.⁷ There are three characters in the *Bermannus*. Lorenz Wermann, a mining expert and friend of Agricola, appears in a Latinized form of his name as «Bermannus».⁸ He is the main speaker and shows the other two discussants around. His Latinized name is, furthermore, reminiscent of the German word for miner, «Bergmann». The two other characters are physicians and humanists (*duo doctissimi et clarissimi medici*; p. 15): Nicolaus Ancon and Johannes Naevius. Ancon already knows Bermannus and introduces Naevius to Bermannus. Ancon is an Aristotelian and an expert in Arabic medicine but contributes comparably little to the discussion.⁹ Naevius, that is Johannes Naeve, is an expert on Greek and Latin medical texts.¹⁰ Most of Bermannus's discussion is with him. Agricola does not appear himself as a character, and it is said at the end of the fictitious dialogue that he is unfortunately absent from the setting at the time (p. 131).

³ See Engewald 1994, 59–77; Naumann 2007, 35–54 for a more detailed account of this episode in Agricola's life.

⁴ If there is no further indication, the page numbers refer to the first edition Basel 1530. See below for the different editions of the dialogue.

⁵ See Hannaway 1992 and Schönbeck 1994 on Agricola as humanist; Engewald 1994, 59, 69; Naumann 2007, 49.

⁶ See Wilsdorf 1955, 37; Naumann 2007, 47

⁷ Schönbeck 1994, 232,

⁸ Not much is known about this person apart from what is said in the dialogue: He plays the role of the mining expert, because he is experienced in this field. He does not only know of the mines in St. Joachimsthal but also of other parts of the world that he has travelled as a soldier. In this, he is compared to Dioscorides who gained his vast knowledge of herbs when serving in the Roman army (*Tribuimus vero Bermanno metallici personam. Nam huius artis peritissimus est, quippe qui miles olim multas regiones peragravit, in quibus res metallicas, non secus ac Dioscorides herbas, dum sub signis Romanis militaret, observavit.* p. 15).

Wermann probably died in 1532 or 1533 fighting the Turkish army in Spiš/Zips. See Wilsdorf 1955, 271; Engewald 1994, 72; Naumann 2007, 40, 51; Norris 2015, 8.

⁹ *Quorum alter (i. e. Ancon) in medicina, quae nostra aetate fere ex Arabibus traditur, non indiligenter versatus est et doctus praeterea ex disciplina peripateticorum* (p. 15). It is not clear who he is. Naumann 2007, 47 and Norris 2015, 8 think that this character might be fictitious. Wilsdorf 1955, 268 suggests that it is an alias for a friend of Agricola. Engewald 1994, 63 and Weber 1994, 6 identify him with Wenceslaus Payer von Elbogen, a physician from that region. Both authors do not explicitly state why it should be this person, but they probably have in mind that the Greek word ἄγκών means elbow (German «Ellenbogen»). Agricola highlights this fact in his work *De veteris et novis metallis* (Basel 1546, p. 407; this work is part of a collected volume; see below) when he mentions the town of Elbogen (now Loket) in Bohemia: [...] *quod nostri Elbogam appellant, Latini Graeco vocabulo idem significante Anconam nominarent.*

¹⁰ *Naevius autem, tum litteris Latinis et Graecis, tum maxime veteri illa medicina eruditus* (p. 15). Johannes Naeve (1499–1574) was a friend of Agricola and physician of St. Joachimsthal. In the introduction to the dialogue, Agricola states that he has studied with him in Italy: *Cuius viri nobile ingenium et studium singulare cum in Italia una operam daremus medicis mihi plane perspectata sunt* (p. 15). See, e.g., Wilsdorf 1955, 306–308; Naumann 2007, 47; Norris 2015, 8.

The work became popular and was reprinted seven times between the first edition of 1530 and 1657.¹¹ In 1546, a second edition appeared that featured slight changes in some passages.¹² This edition was published with Babst in Leipzig as well as in a collected volume comprising several mineralogical works by Agricola with Froben in Basel. The dialogue itself is accompanied by paratexts. The first is a letter to Andreas and Christoph von Könneritz, who studied in Freiburg im Breisgau,¹³ from Erasmus of Rotterdam, in which he praises the witty and yet learned content of the work, especially the clear, simple language and «enargia» (ἐνάργεια; «vivid and graphic description») with which its various topics are treated.¹⁴ Then follows a dedicatory letter by Petrus Plateanus to Heinrich von Könneritz – father of Andreas and Christoph and prefect of mining operations («Berghauptmann») in St. Joachimsthal¹⁵ – in which Plateanus highlights the importance of publishing one's findings and praises Agricola's elaborate and careful work.¹⁶ He further states that it was he who had this dialogue published (p. 7/fol. a4r).¹⁷

Res et verba

At the very beginning of his short introduction, Agricola addresses the problem that he is going to deal with in the dialogue (p. 10):

Saepe ego mecum tum res, quas vel natura edidit vel ars invenit, tum nomina, quae eisdem et Graeca et Latina olim fuerunt indita, animo reputans maximum utraque damnum aliquot iam saeculis fecisse animadverto. Illas, quod partim neglectae iacerent, partim prorsus ignorarentur. Haec, quod aut inepte immutata aut in eorum locum barbara quaedam substituta esse.

Because I often think by myself about both the things that either nature produced or craft invented, and about the Greek and Latin names that have once been given to them, I notice that both have suffered great damage through the centuries. The former, because they were partly neglected, partly thoroughly ignored. The latter, because they have been completely distorted or substituted by some barbaric terms.

¹¹ Wilsdorf 1955, 42. Naumann 2007, 50 states that there are eight Latin editions, a French, a Czech and three German translations of the *Bermannus*.

¹² Apart from the examples discussed in more detail below, Agricola gives, e.g., more context to explain a joke by Demetrius of Phaleron (Basel 1530, p. 18; Leipzig 1546, p. 11; Basel 1546, p. 426) and corrects *Gothmi* (Basel 1530, p. 22) to *Gothini* (Leipzig 1546, p. 14; Basel 1546, p. 424). See Wilsdorf 1955, 178. A more substantial change is also found in the list of colours of *argentum rude* (Basel 1530, p. 70; Leipzig 1546, p. 45; Basel 1546, p. 444 f.; see Wilsdorf 1955, 115) and in the discussion of a further kind of *pyrites*. While Bermannus states in the first edition (Basel 1530, p. 57) that there might be another kind of this mineral that was described by Pliny but has not yet been found, he claims in the second editions that there is no other kind of this mineral than the ones described by Bermannus (Leipzig 1546, p. 37; Basel 1546, p. 440). See Wilsdorf 1955, 103.

¹³ See Hannaway 1992, 559; Engewald 1994, 64; Weber 1994, 5 f.; Naumann 2007, 47 f. for their role in the history of publication.

¹⁴ *Nec satis possum dicere, maiore id voluptate fecerim an fructu. Magnopere delectavit argumenti novitas, exhilararunt ioci liberales obiter inspersi, nec iniucunda fuit dictionis simplicitas, Atticum quiddam referens, praecipue vero me attentum habuit rerum sub oculos expositarum enargia* (p. 3/fol. a2r).

¹⁵ See, e.g., Engewald 1994, 64; Naumann 2007, 40.

¹⁶ See also Engewald 1994, 63; Naumann 2007, 45.

¹⁷ Hannaway 1992, 559; Engewald 1994, 63.

Agricola identifies two causes of concern: First, that knowledge about nature and some crafts has been lost, and second, that the names which were used to denote these items of knowledge are at times either lost as well or are distorted and replaced by «barbaric» terms, that is probably words deriving from Arabic authors.¹⁸ According to Agricola, these difficulties lead to the serious problem that he and his contemporaries are no longer able to treat illnesses that could be healed in antiquity (p. 10, 12). A correct identification of substances and a clear and distinct Latin terminology are identified as crucial problems that medicine had to face in this era.

What might seem a bit counter-intuitive at first sight is that Agricola is not short of names for newly found things. On the contrary, he has many names at hand but they need to be connected to the correct items. This problem is not restricted to earth sciences and very similar debates can be found, for example, in books on animals and plants from this period.¹⁹

To complain about the ignorance of physicians about *materia medica* was, however, not new. Pliny, for example, had already made a similar remark in his *Naturalis historia* (34.108):

Atque haec omnia medici – quod pace eorum dixisse liceat – ignorant. Parent nominibus: in tantum a conficiendis medicaminibus absunt, quod esse proprium medicinae solebat. Nunc quotiens incidere in libellos, componere ex iis volentes aliqua, hoc est impendio miserorum experiri commentaria, credunt Seplasiae omnia fraudibus corrumpenti.

But of all these facts the doctors, if they will permit me to say so, are ignorant – they are governed by names: so detached they are from the process of making up the drugs, which used to be the special business of the medical profession. Nowadays whenever they come on books of prescriptions, wanting to make up some medicines out of them, which means to make trial of the ingredients in the prescriptions at the expense of their unhappy patients, they rely on the fashionable druggists' shops which spoil everything with fraudulent adulterations, [...].²⁰

Agricola's view is, however, not pessimistic. He stresses that people, especially in Italy, have already started to work on improving the language and have made great progress (p. 11), but the exploration of nature requires further effort. Agricola states that he has migrated to St. Joachimsthal for exactly this reason. As there are many different mines in this town, it is an excellent starting point for further research into the medical properties of minerals (p. 14).²¹

¹⁸ This is how the term *barbarus* (and derivations from it) is used in the main part of the dialogue, e.g., on p. 60, 63, and 64.

¹⁹ E.g., Conrad Gessner highlights in a letter to students of medicine appended to his *Catalogus plantarum* (Zurich 1542) that there are many synonyms and quarrels (*litigia*) about names for *simplicia medicamina* (p. 159). In his *Commentarii in sex libros Pedacii Dioscoridis Anazarbei de medica materia* (Venice 1554), Pietro Andrea Mattioli criticizes several identifications of ancient plant names made by Leonhart Fuchs in his *Historia stirpium* (Basel 1542), such as the identification of a kind of anemone (p. 298), the *sphondylium* (modern botanical name *Heracleum sphondylium* L., p. 372), or the *Herba Paris* (modern botanical name: *Paris quadrifolia* L.), p. 481.

²⁰ Translation: Rackham 1952, 207.

²¹ Hannaway 1992, 558; Engewald 1994, 59; Naumann 2007, 45 f. and 81; Norris 2015, 10 f. See Majer 1994 on ore mining in St. Joachimsthal in the sixteenth century.

Discussions about names and their relation to the world of mining and minerals make up a big part of the dialogue. Often, Bermannus has to correct ancient sources.²² Not in every case can a mineral with an ancient name be identified with certainty. This is usually stated and left in *aporia* like in a Platonic dialogue.²³

Dealing with German names

A special feature of the dialogue is how it deals with German terms. It is probably no surprise that there was (and still is) a highly specialised terminology for mining operations and minerals in the vernaculars with often no equivalents in the ancient languages. This is a common phenomenon in crafts that have not yet received much treatment in a scientific or literary discourse in Latin.²⁴ Agricola, therefore, had to coin some new Latin words (neologism of form) or give already existing words an additional meaning (neologism of sense). To help his readers understand the newly introduced Latin terminology, a glossary was appended at the end of the dialogue. It lists the Latin terms in alphabetical order together with their German equivalents. Plateanus created the glossary in the first edition, but it was rewritten and augmented by Agricola himself in the later editions.²⁵

Some of the German terms were just «Latinized» in the sense that the word basically remained the same, but was given a Latin ending.²⁶ This is the case, for example, with «*Kisus*» for «*Kies*»,²⁷ meaning different metal sulphides (p. 55),²⁸ or «*cobaltum*» for «*Kobalt*» (p. 61, 128).²⁹ It should be noted that the latter is not the element «cobalt» but rather a mineral, an arsenic sulphide or another mineral containing cobalt or arsenic.³⁰ Interestingly, there is an addition in the later editions stating that the Greeks called this mineral «*cadmia*» (*Graeci Cadmiam*; Leipzig 1546, p. 40; Basel 1546, p. 467).

²² E.g., in the discussion about machinery used in mining (p. 36 f.); about *pyrites* containing silver (p. 52 f.); about the number of metals (p. 75); about quicksilver (p. 85 f.).

²³ E.g., the list of unknown minerals in the preface by Agricola (p. 12), the identification of *molybdaena* in Dioscorides (p. 50); the identification of *misys* and *sorys* (p. 122). When Bermannus is shortly absent from the «scene», Naevius praises his diligent and scientific approach and especially highlights that he does not declare a matter as confirmed that is still doubtful (p. 125): *Qui quae vere inventa dicere posses, non temere asserit, tantum abest ut rem ullam, quae dubia et incerta sit, nimis etiam affirmet*. See also Wilsdorf 1955, 40 f.

²⁴ Joachim Camerarius, e.g., stresses the difficulties of translating Dürer's work on proportions of the human body in the paratexts to his translation *De symmetria partium in rectis formis humanorum corporum*, Nuremberg 1532. More on this topic can be found in the collected volumes Prinz/Schiewe 2018 and Fransen/Hodson/Enenkel 2017 and here especially in the contribution Morel 2017.

²⁵ Plateanus's glossary contained 76 lemmata, Agricola's *Vocabula metallica* in the edition Leipzig 1546 comprises 127 terms. Agricola's *Interpretatio Germanica vocum rei metallica* (part of the so-called *Meurerbrief*) that was included in the collected volume of Agricola's mineralogical texts printed with Froben in Basel in 1546 (p. 469–487) has even some 500 lemmata. Moreover, the index of this volume comprises 51 pages and some 4000 lemmata. It was collected by Adam Siber. See Wilsdorf 1955, 169; Engewald 1994, 90 f.; Naumann 2007, 85.

²⁶ Wilsdorf 1955, 191.

²⁷ NAE. *Quod est illud?* BER. *Kisum*. NAE. *Neque Graecum neque Latinum est*. BER. *Nostrum est, non aliunde sumptum* (p. 55).

²⁸ See also Goltz 1972, 174 n. 372, 268.

²⁹ *Sed est praeterea aliud genus ferrei quasi interdum coloris, cobaltum nostri vocant, non multum differens a pyrite, quod alio loco nobis indicabitur* (p. 61).

³⁰ See Wilsdorf 1955, 182 and 194; Goltz 1972, 131.

In other cases, Agricola translated German terms into Latin such as «*pendens*» for «das Hängende» and «*iacens*» for «das Liegende» (p. 84). These are technical terms for the location of rock strata. Another example is «*dimensio*» for «Maß», meaning a special size of a mining claim.³¹ In this context (p. 78), the word formation is compared to Cicero's achievements to create a Latin terminology of philosophy:

Naevius: Dimensionem dimensum dicere mihi videris, id est modum sive mensuram fodinae?

Bermannus: Recte sicut Cicero visum visionem etiam dixit,³² et pleraque alia inveniuntur, quibus sic utimur.

Naevius: You seem to call something that has been measured *dimensio* (measuring; mining claim), that is the dimension or the measurement of a pit?

Bermannus: Exactly, just as Cicero calls something that has been seen *visio* (vision) and there are many other words that we use in this way.³³

It should be noted that Bermannus, as a mining expert, frequently uses specialised terminology that cannot be understood by Naevius and Ancon. At times, therefore, they ask him to explain something, or the meaning is provided at a later stage of the dialogue.³⁴

Sometimes the collocutors refer to German words that are not contained in the text. Instead, they hint at them and one needs to know the German term to entirely understand the text. An example is the mineral *galena* that is discussed in great detail;³⁵ *inter alia* its relation to the German equivalent *Glanz* or *Bleiglanz* is addressed (p. 43):

Galena, sive Hispanicum sive alterius gentis vocabulum sit, nihil moror; nam nostrum non esse hinc perspicuum puto, quod serius metalla fodi coepisse in Germania constet. Id certe nostri imitati eandem rem similiter, ultimis tantum modo literis mutatis, appellarunt.

Galena, I do not care whether it is a Spanish word or from another nation; that it is not ours is – I think – clear because, as a fact, they only started later to dig for metals in Germany. Our people have certainly imitated this and called the same thing similarly, just changing the last letters a little bit.

The speaker Bermannus hints at «Glanz» somewhat cryptically and he tries hard to show that «*galena*» and «Glanz» are more or less the same word although it is not true that only the last letters have been changed a little bit. However, even though the German word is

³¹ See Wilsdorf 1955, 189–191 for further examples.

³² He might think of passages such as *Tusculanae disputationes* 2.42 or *De natura deorum* 1.105, 109. The *locus classicus* for Cicero's own conceptions in creating a Latin philosophical terminology is probably the preface of *De finibus bonorum et malorum*. The obvious difference is that Cicero wrote in his mother tongue that was – as Cicero states (fin. 1.1, 4–10) – not regarded as an apt language for a philosophical discourse and thus eschewed. Agricola's work is the other way round. Also important in this respect is probably Cicero's statement in the same dialogue (fin. 3.3) that one has to give new things new names (*imponendaque nova rebus novis nomina*).

³³ Wilsdorf 1955, 121 f. translates this passage differently (and probably not entirely correctly): «NAE.: «Maßen» nennst du die (bergrechtlich übliche) Abmessung, wie mir scheint, das heißt also das Maß oder die Abmessung einer Grube? BER.: Richtig, so wie Cicero das Blickfeld auch Blick nennt, so brauchen wir den Ausdruck «Maße»; für einen solchen Sprachgebrauch kann man noch viele andere Beispiele finden.»

³⁴ See *ibid.*, 189 f. with further examples.

³⁵ See Goltz 1972, 140.

not contained in the main text, it is possible to look it up in the glossary appended to the dialogue.³⁶

Harder to understand are references to German cities, mountains, and other geographical terms. An example is the allusion to the «Kohlberg» (p. 107):

Naevius: Sed quonam loco fodiuntur (i. e., carbones)?

Bermannus: In monte quodam, qui inde nomen habet, prope Zuiccam sito.

Naevius: But where do they mine it (i. e., coal)?

Bermannus: At a certain mountain that is named after it, close to Zwickau.

The name «Kohlberg» does not occur in the text and is only hinted at by stating that the mountain derived its name from the coal that is mined there. Moreover, there is no lemma «Kohlberg» in the appendices of the first edition of 1530 or the edition Leipzig 1546. Only the copious general index to the collected volume Basel 1546 refers to the *mons carbonum iuxta Zuiccam*, but even then it does not mention its German name.

The mention of the city Zwickau in Saxony leads to a short digression on the etymology of the city's name: It was once called «Schwanfeld» which was aptly Latinized to «Cygnea» by Erasmus Stella (p. 107 f.).³⁷ According to Bermannus, the name «Zwickau» was given to it by the Emperor Henry III (1017–1056).³⁸ After finding the city deserted due to frequent inundations, he ordered it to be rebuilt with wider city walls. But when he visited the city in the following year, he found the city walls to be narrower than before, and angrily said in his Saxonian dialect³⁹ (p. 108): *Urbem concidistis*. – «You have cut up/shortened the city.» The Saxonian/German word after which «Zwickau» is allegedly named is not mentioned, although it is highlighted that it should be a dialect word. Through his character Bermannus, Agricola probably hints at «zwicken», meaning «to pinch», which could then metaphorically allude to the city walls being now narrower than before.⁴⁰

Word plays with the meaning of names are not restricted to German terms. A similar example is the etymology of Theophrastus that Naevius mentions *en passant* (p. 94):

Theophrastus profecto, cui a divina quadam vi eloquentiae nomen inditum traditur, res bene cognovisse videtur, cum scribit: [...].

Theophrastus, whose name – as it is said – was given to him because of a certain godlike power of eloquence, seems indeed to have understood rightly, when he writes: [...].

³⁶ Other examples for this feature are the discussion about *ochra* (p. 43): BER. *E pictoribus praeterea nostris quidam vel hodie nomine Graeco, nostrum annectentes, appellant, intelligis quid dicam*. NAE. *Intelligo plane*. (they probably allude to «ochrageel», i. e., «ockergelb»); or about *carbo* (p. 108 f.): NAE. *Ego carbones saepe vidi. Nostri etiam ita appellant adiecto lapidis nomine, quasi dicas Graece λιθάνθρακας* (they mean «Steinkohle», black coal).

³⁷ *Cum antea Suanfeldia ipsi nomen esset, ad quod sane Erasmus Stella, qui celebris nostra aetate medicus fuit, mihi respexisse videtur, quando ipsam Cynaeam appellavit* (p. 108).

³⁸ This is, of course, just folk etymology. The name is probably derived from Sorbic Śwíkawa.

³⁹ *Indignatus Saxonico sermone, quo utebatur, in hanc sententiam dixisse fertur* (p. 108).

⁴⁰ Wilsdorf 1955, 147 translates it as «Verzwickt habt ihr diese Stadt gebaut». This is, however, not an apt translation as «verzwicket» means «intricate» and does not fit the fact that the city walls encompassed a smaller area than before.

Naevius hints at the famous story that Theophrastus was originally called Tyrtamus but Aristotle had given him his new name due to his elegant, godlike ability to speak.⁴¹ This word play is interspersed in Naevius's speech. It does not serve the argument except to characterize the speaker (and ultimately also the dialogue and its author) as witty and learned. But in contrast to the examples of German geographical names, the etymology might have been known to most of the readers. Even if it was not, it is not difficult to understand with just a little knowledge of Greek as the name «Theophrastus» itself is given in the text.

What is even more peculiar is the fact that Agricola came up with loan translations and neologisms in Latin for things that already had a proper ancient name.⁴² A good example can be found on page 102 of the first edition. In this passage, the characters speak about different forms of gypsum, of which is said that it has retained its name in German (*suum nomen apud nostros retinet*). A special kind of gypsum is selenite – not the ion, but the mineral. This is a transparent mineral that was already used like glass in antiquity. Pliny calls it *lapis specularis*. The German name is «Marienglas» or «Frauenglas» or «Fraueneis» because it was used to cover pictures and figurines of St. Mary. This is what Bermannus says in the dialogue (p. 102):

Lapidem specularem glaciem Mariae appellant, de quo Plinius his verbis diligentissime mihi scripsisse videtur:

They call the *lapis specularis* «glacies Mariae» about which Pliny writes the following, very accurate as it seems to me:

With these words, Bermannus introduces a longer quotation of one and a half pages from Pliny's *Naturalis historia* (36.160–162). It is obvious that Agricola and his character Bermannus were well aware that Pliny already had a name for this mineral. Still, Agricola chose not to give the proper German name but a loan translation. He thus created a new Latin word, a neologism of form.

A similar case is that of a kind of mica that has the German name «Glimmer» or «Katzen-silber», meaning «cat's silver» or «fool's silver». This passage has been slightly altered in the later editions of the dialogue.⁴³ In the first edition of 1530 (p. 96), Ancon states that the mineral they are discussing shines like sparks. Bermannus replies:

Est ut dicis atque id ipsum splendorem forte aliquis nostros imitatus appellaret. Metallici vero etiam felium argentum nominare solent. Argentum quidem, quod colore argento ita simile sit, ut pueros et rerum metallicarum imperitos decipere possit. Felium vero, sive a similitudine quod eorum oculi etiam noctu radiant, sive quod cassum quiddam et inutile hoc nomine significare volunt.

It is as you say and one could name it maybe «splendour» imitating our people (the German word is «Glimmer»). But miners usually also call it «cats' silver». «Silver», because its colour is so similar to silver that children and people not acquainted with mining can

⁴¹ This is mentioned, e. g., in Strabo 13.2.4 (618.12): τὸν τῆς φράσεως αὐτοῦ ζῆλον ἐπισημαινόμενος; Dio- genes Laertius 5.38: διὰ τὸ τῆς φράσεως θεσπέσιον; Stephanus of Byzantium, *Ethnica* ε 107 (Ἑρεσος): διὰ τὸ τῆς φράσεως θεσπέσιον; *Suda* θ 199 (Θεόφραστος): διὰ δὲ τὸ θεῖως φράζειν.

⁴² This fact seems to have been overlooked by Wilsdorf 1955, 189–191 in his chapter «Die lateinischen Äquivalente der deutschen Bergmannsprache».

⁴³ See *ibid.*, 184.

easily be fooled. «Cats'», however, either after the likeness because their eyes also shine at night, or because they want to label something void and useless with this name.

Agricola, through his character Bermannus, came up with two loan translations of German terms into Latin: He translated «Glimmer» with «*splendor*» and «Katzensilber» with «*felium argentum*». ⁴⁴ In the case of the latter, he even imitated the German word order, which is a bit unusual in Latin where *argentum felium* would probably be preferred. In both cases, an explanation for the word is given. In the first case, the name is linked to its sparkling. In the second, to the similarity of silver and to the fact that the mineral reflects light just as the eyes of cats do; or that it is fake, which is linked to the animal that is sometimes perceived as deceitful. Both etymologies are incorrect according to our modern knowledge. «Katzensilber» is formed analogously from «Katzengold», which in turn derives from Old High German *kazzungolt*, meaning the golden resin of cherry trees. «Katzengold» designates a certain mineral known as «fool's gold» or «pyrites». ⁴⁵ Even though Agricola's etymology might not be correct according to modern standards, he at least helped us understand his line of thought. As in the other passages, Agricola through his characters tried hard to avoid German words, although he still seems eager to discuss them. He thus resorted to this strategy of «imitation» (*imitatus*) to give his readers an impression of the German originals and the conceptions behind them.

As has already been stated, this passage was partly rewritten in later editions. In the editions of 1546, it reads (Leipzig 1546, p. 63; Basel 1546, p. 454): *Est ut dicis. Id ipsum Latini, ut opinor, micam appellant, metallici Germani et micam et felium argentum, sed suae linguae nominibus.* [...] – «It is as you say. The Latin speakers call it, as I think, «mica», the German miners both «mica» and «cats' silver», but with names of their own language.» While the rest of the passage remained the same, there are several crucial changes in the quoted sentences. The complex sentence with the potentialis *aliquis appellaret* and the construction with conjunct participle «*nostros imitatus*» is replaced by «*sed suae linguae nominibus*», making it more clear and easier to understand that they use German words. There is, furthermore, new information. First and foremost, Agricola stated that there actually is a proper Latin word for this mineral, and it is *mica*. Maybe he was not aware of this when the first edition of the *Bermannus* was published, but it is interesting that he nevertheless stuck to his loan translations, although with an important, second change: «*splendor*» does not appear any more. Instead, *mica* now also serves as the translation of a German word. The same is true for the glossary at the end. While one can look up «*splendor*» in the first edition, one can only find «*mica*» as Latin equivalent for «glimmer oder katzen silber» in the later editions. Agricola does not say explicitly how «*mica*» could be the equivalent of the German word «Glimmer», but he probably assumed that the noun *mica* is derived from the verb *micare* that can have the meaning «to glitter» or «to sparkle». ⁴⁶ He probably thought that the Latin word features the same concept as the German equivalent and could

⁴⁴ Wilsdorf 1955, 137 and 184 translates this passage incorrectly as «Und da mag einer von unseren deutschen Bergleuten in Anlehnung an dieses Blitzen für dies Mineral einen vielleicht eigentümlichen Namen gefunden haben.» Therefore, his claim that «*splendor*» does not occur in the main text but only in the glossary is unsubstantiated.

⁴⁵ See, e.g., Kluge/Seebold 2011, 482.

⁴⁶ See Wilsdorf 1955, 184. The etymology is not correct according to modern knowledge.

thus serve as an analogous translation. This might be the reason why he changed *splendor* to *mica* in the later editions.

One last example for this phenomenon should suffice. When Bermannus is talking about mineshafts, he uses the Latin term *puteus*. At one point, Naevius interferes (p. 31):

Naevius: Quod tu modo puteum, Vitruvius specum appellat.

Bermannus: Ita est, atque cum eo Germanicum nostrum convenire videtur, voce deducta a verbo, quod licet utrique nationi diversum sit, idem tamen significat.

Naevius: What you now call *puteus* («well»), Vitruvius calls *specus* («cavern» or «pit»).

Bermannus: That is true and our German word seems to fit it. The word is derived from the verb, which may be different for both nations, but it signifies the same.

This reply by Bermannus is somewhat cryptic. Bermannus frequently uses the term *puteus* instead of the classical term *specus*. According to the glossary at the end of the dialogue, both mean «Schacht», that is, mineshaft. Wilsdorf is probably right when he assumes that Agricola hints at an analogous forming of the German «Schacht» and the Latin «*puteus*».⁴⁷ Just as «Schacht» is derived – at least according to Agricola – from «ausschachten», meaning «to excavate» or «to sink», so is «*puteus*» derived from «*putare*» in the sense of «to trim» or «to prune».⁴⁸ In this case, a neologism of sense is used to constitute an analogy between the German and the Latin text, even though there is a proper Latin word. As in the case of *mica*, a kind of etymology is employed, in which a noun is derived from a verb. With this method, Agricola linked not only *res* and *verba*, but also two languages, as he tried to find similar etymologies that could help to grant his proposed identification some authority.

Conclusion

We can see from these examples that Agricola not only introduced new Latin words, or added meanings to already existing words where there were none before, but also where words were actually inherited from antiquity. This peculiarity is difficult to explain, especially since one needs to know the German terms that were translated in order to fully understand the dialogue. The glossary is helpful in this respect, but not exhaustive. Other Latin scientific works of this time usually include single German or other vernacular words if they refer to them. A good example is Conrad Gessner's geological work *De rerum fossilium figuris* (Basel 1565)⁴⁹ where loan translations of German terms are named together with the original, such as «Monmilch» and «*lac lunae/lac lunare*» (fol. 50r) or «*pisolithum*» or «*orobia*» and «Erbstein» (fol. 70v). Most notably, Gessner did not imitate Agricola in providing loan translations for terms that already have an ancient name.⁵⁰ Therefore, he

⁴⁷ See *ibid.*, 179.

⁴⁸ «Schacht» is, in fact, derived from a form of «Schaft», and «ausschachten» in turn derived from «Schacht». See Kluge/Seebold 2011, 791. *Putare* and *puteus* might indeed be etymologically related. See Walde/Hofmann 1972, 393.

⁴⁹ This work was included in the collected volume *De omni rerum fossilium genere, gemmis, lapidibus, metallis et huiusmodi libri aliquot* that comprises eight geological and mineralogical writings and more than 1000 pages. It was edited by Conrad Gessner himself and printed in 1565, the year of his death, with Jacob Gessner in Basel.

⁵⁰ See Schierl 2019 on Gessner's and Agricola's approach to *fossilia* in general.

merely mentioned that the *lapis specularis* has the German name «Unser Frawen Eis» (fol. 58r), and remarked about fool's gold (fol. 76v): *Metallici nostri appellant nomine ex fele et auro ducto* (Katzengold *vel* Strågold). – «Our miners call it with a name derived from cat and gold (<Katzengold> or <Strohgold>).» The same is true for Johannes Kentmann's list of geological terms *De rerum fossilium, lapidum et gemmarum maxime figuris et similitudinibus liber*.⁵¹ The chapter on the *lapis specularis* can be found on fol. 26v.

In contrast to these works, the *Bermannus* is a dialogue, which is a somewhat higher and more artful genre than, for example, a monograph or a treatise. It is therefore possible that Agricola felt obliged to avoid words from the vernaculars due to generic constraints. However, Agricola does not seem to have used German terms in his other treatises either, although he at least avoided terms in his later publications like *glacies Mariae* and *argentum felium*, for which there already was an ancient word.

It is therefore probable that Agricola's philological interests played a role. It might have been an appealing challenge for him to find good loan translations or exact analogies of Latin and German terms. In accordance with his own principles, Agricola probably aimed at finding suitable ways to avoid vernacular words while at the same time giving his audience an impression of the conceptions behind them.

The success of his dialogue proves that his contemporaries apparently took a positive view of this way of dealing with Latin loanwords from German. This is shown not least by the dedication letter of Erasmus of Rotterdam who praises the clarity and wit of Agricola's language. Erasmus himself had pleaded in his famous dialogue *Ciceronianus*, published for the first time two years before the *Bermannus* in 1528, to take Cicero as a stylistic model but not to follow him slavishly.⁵² And while this more relaxed attitude towards the imitation of classical models certainly prevailed in the Neo-Latin literature as a whole, this is especially true for scientific texts that had to come up with neologisms more frequently than any other field to present their new findings.⁵³ But what makes the case of the *Bermannus* special is its use of German loan translations even for objects that already had an ancient Latin name; and that he naturally turns to the international *res publica litteraria* in Latin but nevertheless seems to presuppose some knowledge of German.

Literature

ENGELWALD, G.-R., Georgius Agricola, Stuttgart / Leipzig ²1994 (Einblicke in die Wissenschaft).

FANTAZZI, C., Imitation, Emulation, Ciceronianism, Anti-Ciceronianism, in: P. Ford / J. Bloemendal J. / C. Fantazzi (eds.), Brill's Encyclopaedia of the Neo-Latin World: Macropaedia, Leiden / Boston 2014, 141–153.

FRANSEN, S. / N. HODSON / K. A. E. ENENKEL (eds.), Translating Early Modern Science, Leiden / Boston 2017 (Intersections: Interdisciplinary Studies in Early Modern Culture 51).

⁵¹ This book is one of the writings included in Gessner's collected volume of geological and mineralogical texts.

⁵² See, e.g., preface to the modern edition of the dialogue by Payr 1990, XXXIII–LII and Helander 2014, especially 39f.; Fantazzi 2014, especially 148–151; Korenjak 2016, 35–37 (especially 37 for Erasmus).

⁵³ Helander 2014, 40.

- GOLTZ, D., Studien zur Geschichte der Mineralnamen in Pharmazie, Chemie und Medizin von den Anfängen bis Paracelsus, Wiesbaden 1972 (Sudhoffs Archiv. Zeitschrift für Wissenschaftsgeschichte. Beihefte 14).
- HANNAWAY, O., Georgius Agricola as Humanist, in: *Journal of the Histories of Ideas* 53 (1992), 553–560.
- HELANDER, H., On Neologisms in Neo-Latin, in: P. Ford / J. Bloemendal / C. Fantazzi (eds.), *Brill's Encyclopaedia of the Neo-Latin World: Macropaedia*, Leiden / Boston 2014, 37–54.
- KLUGE, F. / E. SEEBOLD, *Etymologisches Wörterbuch der deutschen Sprache*, Berlin ²⁵2011.
- KORENJAK, M., *Geschichte der neulateinischen Literatur: Vom Humanismus bis zur Gegenwart*, Munich 2016.
- MAJER, J., Ore Mining and the Town of St. Joachimsthal / Jáchymov at the Time of Georgius Agricola, in: *GeoJournal* 32 (1994), 91–99.
- MOREL, T., Bringing Euclid into the Mines: Classical Sources and Vernacular Knowledge in the Development of Subterranean Geometry, in: S. Fransen / N. Hodson / K. A. E. ENENKEL (eds.), *Translating Early Modern Science*, Leiden / Boston 2017 (*Intersections: Interdisciplinary Studies in Early Modern Culture* 51), 154–181.
- MORELLO, N., «Bermannus» – The Names and the Things, in: F. Naumann (ed.), *Georgius Agricola, 500 Jahre*, Basel / Boston / Berlin 1994, 73–81.
- NAUMANN, F., *Georgius Agricola: Berggelehrter, Naturforscher, Humanist*, Erfurt 2007.
- NORRIS, J. A., Agricola's Bermannus: A Dialogue of Mineralogical Humanism and Empiricism in the Mines of Jáchymov, in: T. NEJESCHLEBA / J. MICHALÍK (eds.), *Latin alchemical literature of Czech provenance: Proceedings from the Centre for Renaissance Texts Conference (16–17 October 2014)*, Olomouc 2015 (*Edice Sborníky*), 7–20.
- PAYR, T., Erasmus von Rotterdam, *Dialogus cui titulus Ciceronianus sive De optimo dicendi genere – Der Ciceronianer oder Der beste Stil. Ein Dialog / Adagiorum Chiliades (Adagia selecta) – Mehrere tausend Sprichwörter und sprichwörtliche Redensarten (Auswahl)*, Darmstadt ²1990 (Erasmus von Rotterdam – Ausgewählte Schriften 7).
- PRINZ, M. / J. SCHIEWE (eds.), *Vernakuläre Wissenschaftskommunikation: Beiträge zur Entstehung und Frühgeschichte der modernen deutschen Wissenschaftssprachen*, Berlin / Boston 2018 (*Lingua Academica* 1).
- RACKHAM, H., Pliny, *Natural History in 10 volumes: Volume 9: Libri XXXIII–XXXV*, London 1952 (Loeb Classical Library 394).
- SCHIERL, P., Gessner und Agricola über «Fossilien»: Naturforschung zwischen Autopsie und Tradition, in: U. B. Leu / P. Opitz, *Conrad Gessner (1516–1565). Die Renaissance der Wissenschaften / The Renaissance of Learning*, Berlin / Boston 2019, 145–158.
- SCHÖNBECK, C., Georgius Agricola – ein humanistischer Naturforscher der deutschen Renaissance, in: *NTM International Journal of History and Ethics of Natural Sciences, Technology and Medicine* 2 (1994), 229–242.
- WALDE, A. / J. B. HOFMANN, *Lateinisches etymologisches Wörterbuch: Band 2: M–Z*, Heidelberg ⁴1972.
- WEBER, W., Georgius Agricola, Begründer der Montanwissenschaften, in: *NTM International Journal of History and Ethics of Natural Sciences, Technology and Medicine* 2 (1994), 1–12.
- WILSDORF, H. (assisted by H. PRESCHER / H. TECHEL), *Georg Agricola. Bermannus oder Über den Bergbau: Ein Dialog*, Berlin 1955 (*Georgius Agricola – Ausgewählte Werke* 2).