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Dicing towards Death: An Oracle Game for Miners at the Falun Copper Mine from the Early Seventeenth Century

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In the early seventeenth century, the city of Falun was among the most important cities in Sweden because of its profitable copper mine, called Stora Kopparberget (the Great Copper Mountain). Working as a miner was, particularly in this period, a dangerous profession with high risks. The lives of the miners were frequently exposed to the unpredictability of this dangerous work, and mine accidents were a constant peril. During the Middle Ages and the early modern period, both the accidents and misfortune which befell the miners as well as their successes and wealth were seen as expressions of God's plan for salvation. People therefore often turned their faith into religious or magical strategies in their effort to protect their lives.

The aim of this article is to highlight the connection between dicing and dying in early modern mining industry by analysing an oracular dice game book for miners, printed in Stockholm in 1613. A local mining clerk, Gisle Jacobson, published the text, entitled Ett litet Tidhfördriff (*A small pastime), which exploits the peculiar fact that the miners at Stora Kopparberg made decisions with the help of a ritualized dice game.*

Introduction

Death was always present in older societies, but few social groups were as generally aware of it in their daily work as miners and their families. For the miners at Stora Kopparberg in the Swedish region of Dalarna, being killed without warning and being exposed to a sudden and unforeseen death (Lat. *mors repentina et improvisa*), a Bad Death (Lat. *mala mors*) was a characteristic of the profession.[1] As described in the introduction to this volume, the art of dying demanded preparation and planning. An *ars moriendi* which would encourage a harmonious and conscious

1 For *mors repentina et improvisa* which was considered a bad death (*mala mors*), see Kaiser 1983, 65 and Ariès 2008, 10, 108, 118. For the significance of the place of death, see Ariès 2008, 107.

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Helsinki: Helsinki Collegium for Advanced Studies. 129–151.

"good" death, a death which one was prepared for, was an experience that not all miners had the advantage of experiencing. If it happened that miners died in a mine collapse, it was not even certain that the body could be found, in which case a church burial would be prevented.

Therefore, this group of professionals put their faith in magical and supernatural practices in their attempts to avoid their own violent and unexpected deaths. They used various oracles and other superstitious activities sometimes practised in the form of games. Today, we know of one game in particular, a dice game called the "*dobblet*" or "*dobblet vid gruvstugan*" (gambling at the mining cottage) which is exceptional for the mine as a place of work and also crucial for its internal organization and the taxation of the mine's yield. The miners used this game to agree upon the order in which the work cooperatives were allowed to operate in various mining chambers at Stora Kopparberg. The game was played over many centuries on the most significant and mystical day of the year, New Year's Day, in order to help the miners make difficult decisions in connection with the organization of this hazardous work.[2]

Among the various forms of superstitious practices that developed at the mine, I found a strange little oracular game book entitled *A small pastime* (*Ett litet Tidhfördriff*), which was printed in Stockholm on 2 September 1613.[3] The booklet was obviously written at Stora Kopparberg, and is one of Sweden's few examples of fiction from the working community during the early modern period. One exciting thing about the text is that it does not rework or translate a German (or Latin, French or English) original, like so many other Swedish texts from this period. The booklet is unique for this Swedish mining environment from the beginning of the seventeenth century, and reflects this specific milieu in a special way. Nevertheless, the text has not been noticed in Swedish literary history, since it does not fit into the familiar early modern literary genres. Unlike many entertainment texts from this period, this work of fiction is not anonymous and has no dedication. The author's name is Gisle Jacobson and, among other things, his text concerns chance, luck and God's almighty power. The booklet illustrates not only how the miners attempted to prevent dangerous situations by looking into the future, but also shows their feelings towards the omnipotence of chance in relation to the idea of God's providence.[4]

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2 For a discussion of the game in connection with the work in the mine during medieval and early modern times, see Ridder 2013b. On the miners' belief in supernatural beings, see Forslund 1924; Åmark 1951; Tillhagen 1981.

3 Collijn 1943, 418.

4 See my article on the subject, Ridder 2013a, in which I describe the attitude to games of chance and fortune during that period. In Ridder 2013b, 327–330, I mention the parallels between this fortune-telling book and a medieval game by the name of *Ludus regularis seu clericalis*, a dice game developed by a pious monk in the tenth century, which has strong similarities with the miners' oracle game.

Today, the function and meaning of Gisle Jacobson's text is rather hard for a modern reader to comprehend. In one of the most important standard works on Swedish mining history, *Gruvbrytningen och kopparhantering vid Stora Kopparberget intill 1800-talets början* from 1955, the historian Sten Lindroth comments that Gisle Jacobson was a man of "literary ambition", which resulted "in a quite special product, called A small pastime" which "presented a collection of faithful didactic poems, amply linked to the game for the mining shift rooms which was well-known to the Kopparberg's miners".[5]

This wording illustrates that Lindroth has not really understood the point of the mining clerk's "literary ambition" and that his "special product" is as much a poetic text as a parlour game for miners. However, research in literary history on early modern narratives, with their sometimes experimental and unconventional hybrid forms, was not especially voluminous in the middle of the 1950s.[6] Oracular gaming texts, or dice fortune books (*Würfellosbücher*) as they are also called, belong to a mixed genre, and have been noted to some extent in German research on literary history.[7]

The starting-point of Gisle Jacobson's text, its *inventio*, is the miners' dicing ritual, the "*dobblet*". The text deals with the discrepancy between the observation of contingency and the expected providence in each lot, which is based on the throw of the dice. The die as an oracular instrument symbolized life's unpredictability and the vagaries of Lady Luck. There is a long philosophical discourse on people's thoughts about chance in relation to God's almighty power in which the problem was solved theologically by letting Lady Luck constitute a part of God's plan.[8] The Western philosophical tradition deals with the question of random events by using the term contingency, which describes something which is temporarily what it is, but which could also have turned out differently. This goes back to Aristotle, and links etymologically to the Latin verb *contingere*, which literally means "to touch each other".[9] Thus, contingencies are events that are neither necessary nor impossible, and which coincide in time and space but unpredictably. A thing or event happens either in one way or another. The door can be open or closed. Therefore, contingency refers to the future and how it could be represented, but implies more than simply chance, since chance actualizes contingency and the fact that the world and future are not determined and governed by a higher power.

As a result, the term contingency is in opposition to the idea of the world being predictable through God, which is called providence, or the Latin term *providentia dei*, and is, for example, manifested in situations where decisions are to be made.

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5 Lindroth 1955, 67.

6 This still can be a problem; see Ridder 2012.

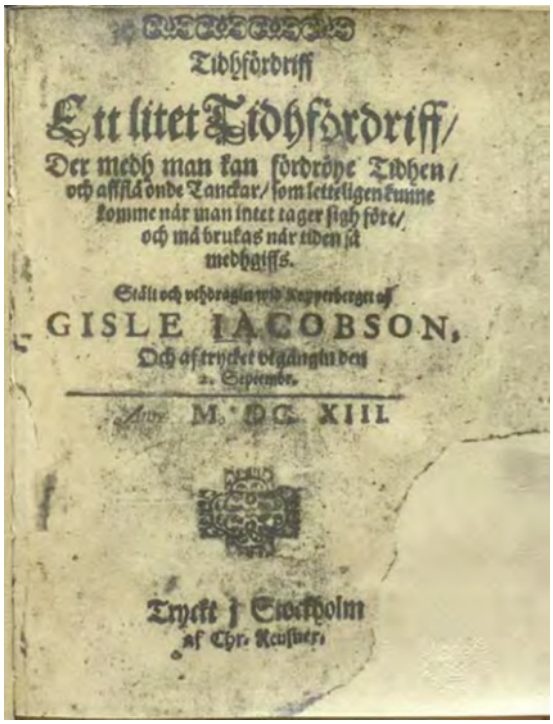
7 About *Würfellosbücher* and *Losbücher*, see Böhm 1932/1933; Bolte 1925 and the bibliography Zollinger 1996.

8 Walter Haug has drawn our attention to the fact that medieval people understood that conditions in the form of Lady Luck having no place in God's plan is the solution to the contingency problem, in particular where she is offered as the one mastering this contingency, Haug 1995, 1, 7.

9 The Latin term *contingentia* is a translation of Aristotle's *endechómenon*, which means possible.

Contingency occurs in the obvious randomness of catastrophes or disasters, which becomes more observable in societies where technological developments bring with them the risk of accidents and the danger of an unpredictable and quick death.[10] Catastrophes in connection with technological developments, in contrast with natural disasters, for example, affect human attitudes to the environment and other people, which is clearly illustrated by the description of catastrophes or disasters after the event.[11] In the same way, the early form of capitalism which developed at the Stora Kopparberg had a strong influence on people's relationship with and attitude to negative events and death. People threw dice to test their individual luck, and the general view was that luck in connection with games that rest on chance is an expression of some form of divine favour. Luck demonstrates that higher powers are sympathetic towards the player.

The aim of this article then is to emphasize the connection between dicing and dying, and to illustrate how miners dealt with their life-threatening work by using dice as an instrument for decision-making in their dangerous but frequently lucrative working conditions. At first, I will introduce the oracle book, its author and the miner's dice game. I then use contemporary sources to describe how this dangerous work was perceived, and how people at that time dealt with risk and danger. After this, I will illustrate various superstitious practices to place the miners' rituals in a larger context.


Tidhfördriff

Ett litet Tidhfördriff/

Der medh man kan fördröye Tidhen/ och afflå onde Tanckar/ som letteligen kunne komme när man intet tager sigh före/ och må brukas när tiden så medhgiffs.

Stält och vthdragin wid Kopperberget af

GISLE IACOBSON,

Och af trycket vtgängin den 2. Septembr.

Anno M. DC. XIII.

Tryckt j Stockholm af Chr. Reusner.

Picture 1. Title page of Gisle Jacobson's A small pastime (*Ett litet Tidhfördriff*) printed in Stockholm in 1613.

10 In this regard, the history of life insurance is interesting, as it started to take shape seriously during the eighteenth century in England where they could also bet on other people's lives in a more organized way, which was later banned. For this, see Clark 1999.

11 Clarke & Short 1993, 377–379.

Dobblet vid gruvstugan (Gambling at the Mining Cottage)

The full title of Jacobson's booklet is *A small pastime, wherewith one can delay time and get rid of evil thoughts, which can easily come when one has nothing to do and to be used when time allows*.[12] The text is not very long; in a modern edition, it comprises about 20 pages. Directly after the title-page, before the oracular text begins, the booklet offers a passage called *Education* (*Underwiszning*), followed by an address to the reader (*Til Läsaren*). The text is meant to be entertaining and thought of as a diversion when you are depressed and have been afflicted by evil thoughts. You are allowed to use the text if you do not have anything else, that is, more reasonable things to do. The modern concepts of "leisure" and "entertainment" are not applicable in an early modern context, and to understand what exactly is meant here, we should look at the passage called *Education*, which consists of a kind of manual:

> My name is A small pastime. If anyone agrees to spend some time and wants to do it right, you must get three dice. Then you wish for something, preferably something honourable. And when you then throw the dice, you must remember the score and look it up in the book. […] If you are two or more players, everyone should freely throw the dice and then interpret without force or danger the answer they get from the text. If anyone should not be able to manage it, there are hopefully good interpreters among the party who can help by giving advice and ideas.[13]

Clearly, the text should not just be read. To use it correctly, the reader should fetch three dice, wish for something "that can bring the best of honour" ("*helst kan lända til ähra*", A2^{r}), throw the three dice, and then look for the same score in the booklet. Three six-sided dice, numbered from one to six, give a total of 56 different combinations if you throw all three simultaneously. Consequently, the text itself consists of 56 rhymed stanzas, combined with schematic pictures of three dice that are linked to all possible combinations. The description given above provides the rules of the game which, according to the text, shall be used to amuse the miners or junior mining-hands, for example, in connection with a journey.

The booklet can be read as a narrative but since its conception is based on the miners' game, it also functions as a parlour game. When the miner then wishes for

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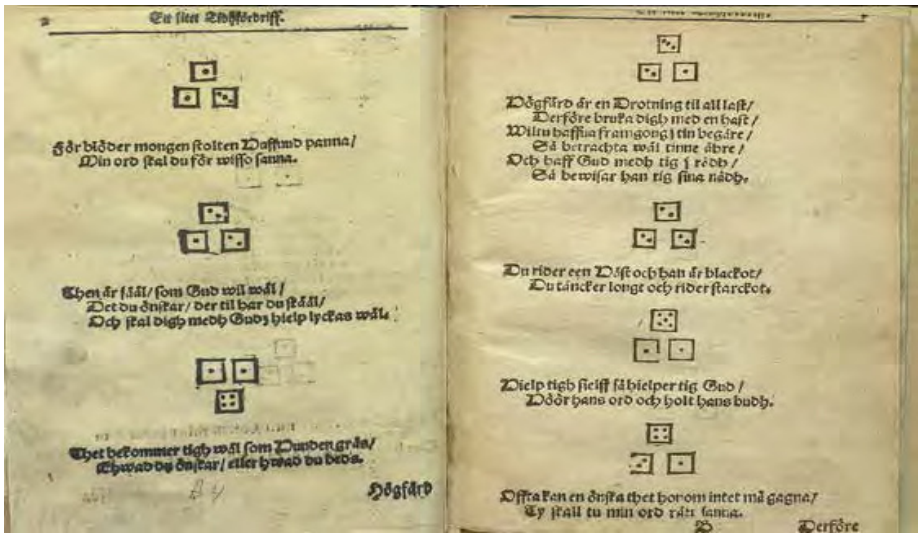
12 Gisle Jacobson, *Ett litet Tidhfördriff/ Der medh man kan fördröye Tidhen/ och affslå onde Tanckar/ som letteligen kunne komme när man intet tager sigh före/ och må brukas när tiden så medhgiffs/ ställt och vthdragin wid Kopperberget af Gisle Iacobson och af trycket vtgångin den 2. septembr. 1613.* Stockholm. All original quotes from the text in the article are my modernized translations. See the edition of the text and my German translation in Ridder 2014, 264–303.

13 "*Eet litet Tidhfordriff må jagh heta/ Om någon wil efter migh leta/ Och der hoos wil migh rätt förstå/ Skal han lata efter try Terningar gå/ Och sedan en god önskan begära/ Den honom helst kan lända til ähra/ Och sedan kasta medh Terningar try/ Så skal han wäl merckia och si/ Huar han får samma ögen igän/ […] Ähre j flere än twå eller trij/ Skal hwar kasta sitt kast frij/ Och hwar sielf sins kasts vthtydare wara/ Förutan all nögdh och fahra/ Kan en det icke allene göre/ Hoppes man det att see och höre/ Att ibland selskap finnes vthtydare gode/ Det man icke annan kan förmode/ Som leggie för hwar annan löök opå!*" (A2^{r}– A2^{v})

something honourable and throws the dice, this throw leads him to a poem that is thought of as a lottery oracle. Every poem gives the miner different rules for living and moral advice as an answer to a wish made before he threw the dice.



Picture 2. Oracle game text in Gisle Jacobson's *A small pastime* (*Ett litet Tidhfördriff*). The booklet shows all the 56 combinations of the three thrown dice with a rhyme stanza for each and every combination.

The author's name is printed on the title-page, and he has even signed his address to the reader. Gisle Jacobson was one of the first mining clerks in the Falun mine at the beginning of the seventeenth century. The title of mining clerk was administratively a very important post, which meant the maintaining the register of such things as fires in the mine or minutes from inspections. Such a post was not granted to just anyone, and it is shown that the author had a past within the Royal Chancery.[14] He owned a part of a smelting shed, and lived with his wife in Falun, at least some of the time.[15] This explains why he was familiar with the environment, the town and the people, and why he knew about the *dobblet vid gruvstugan.*

A closer investigation of the medieval documents related to this game demonstrates that many functions which have to do with mining organization were linked to this custom. This ritualized lottery took place once a year around New Year, and Gisle Jacobson has described it in one of two poems which follow the dice game text itself and end his booklet. One poem is a pious admonition to the junior mining-hands, and the other is called *Yet another way to throw three dice*

14 Lagergren 1913, 16. Contemporaneous sources state that he had been working as a customs clerk or "*kegenskrivare*" in Stockholm at least until 1593 and in Åbo between 1595 and 1599. De Brun 1924, 822f. Gisle Jacobson is mentioned several times between 1587 and 1615 in *Stockholms stads tänkeböcker*. Nikula & Nikula 1997, 213 lists him for the period between 1595 and 1599. He then came to Falun, where he was mentioned in the Kopparberg church accounts between 1614 and 1620, but not the following years. This information is in *Biographia Cuprimontana*, a collection of biographical material on people who are associated with the copper mine in Falun and its company, Stora Kopparbergs Bergslag AB. The collection is found in the company archive of Stora Enso AB, now the archive centre of Dalarna.

15 According to one of Eric Hammarström's unprinted collections.

used by the Miners at Stora Kopparberg (*Ännu ett annat sätt att kasta med tre tärningar som används av Bergsmännen vid Stora Kopparberget*), a description of the *dobblet vid gruvstugan*. This poem addresses a person who means to visit the copper mine in Falun, a place which was already a well-known attraction:

> At the Stora Kopparberg mine, you usually do what gives the miners both honour and fame. Every miner must hurry to throw three dice at New Year. Those who manage to score highest may be first in the pair line and have an advantage over the others, who must wait further down the pair line. But the one coming last will be stuck there because of his low and unlucky throw. This may be due to a three, four and six on the dice. When that happens, you hear shouts of pleasure. Every man laughs and is happy about it. Then there is delight and no cries. Those who come first are likely to get copper, and those who are last get just rocks. Of course, many are afraid of this. Anyone who wants to know and ask more about it may find his way to Stora Kopparberg at New Year, as said above.[16]

Here, Gisle Jacobson mentions something called the pair line, and assumes that even a reader who does not come from Falun and Stora Kopparberg understands what this means. The term was used to denote the order in which the mining teams took turns to break ore in the mine. The author explains that if one gets a high score at the gambling game, it meant a good position in this order, while a low number gives a bad position. If one threw three dice simultaneously, the lowest number one could get was 1:1:1, that is, three; followed by 1:1:2, which gave four; 1:2:2 five and so on, and the highest number in this regard was 6:6:6, that is, 18. The miners played this game in order to decide the mining order and allotment of the ore, and as a result every mining team's success or failure, profit or loss or, in the worst case, death. It was impossible to know in advance where and when the rich ore would reveal itself, and when and where a devastating and deadly mine collapse would happen in connection with the different shifts. Thus, the right order and a good position in the mine were often of life-changing importance.

To understand Gisle Jacobson's oracle gaming text and dice fortune books (*Würfellosbücher*) in general, the relation between oracles and gaming, which is quite complex, has to be considered. Through the ages, gaming seems to be a constant activity but has been valued differently. The joy in being able to forget oneself and time in order to relax in an apparently goalless activity, which at the same time was its goal, is as tempting now as it was 5000 years ago. During the Middle Ages and the early modern period, rich and poor, nobles and clerics alike, gambled. Medieval sources talk of the large sums of money the rich nobles or

16 "*WJd kopperbergz Gruffua plågar wara wijs/ Der af Berkmännen bäre både äre och prijs/ Nyårs tidh medh try Terningar att kasta/ Det til hwar Berksman moste sigh hasta/ Den högste ögon på try Terningar kan få/ Han får fremst j par gongen gå/ Och haffuer en fördel/ fram för andra/ Som länger åther j gongen monde wandra/ Men den som j rumpan kommer/ han sitter der fast/ Det waller hans ringa och arma kast/ Try es fyra eller sex ögon kunne det göra/ När det skeer/ skal man glädie höra/ Hwar man skratta och lee der ååt/ Då är lust och glädie och ingen grååt/ Den fremst kommer får för kopper än den eftrest malm/ Derföre gör det mongen stor ångest och harm/ Den widare her om wil wetta och fråga/ Han må sigh hijt til kopperberget wåga/ Nyårs tidh som förre är sacht*" (D2^{v}–3^{r}).

church leaders wagered, even if gambling was forbidden for churchmen. Games of chance particularly were considered to be an inappropriate diversion for monks and priests, as well as for women and children. From the perspective of medieval moralists, gambling and above all games of chance were linked to a catalogue of sins which was repeated constantly over many centuries. Gambling was associated with behaviour unfit for Christians, like swearing, lying and cheating.[17] But even evil acts like violent behaviour, gambling addiction, whoring, drinking and ruthless enrichment were considered as the bad deeds seen to be promoted by games of chance and dice. Moralists of the time and the authorities were quite simply worried about the extent to which the gamblers, with their sinful behavior, jeopardized the salvation of their souls. But gambling and games of chance also worked as a relaxing activity in an environment characterized by and a dangerous and often life-threatening existence, especially for miners. For them, games of chance meant the possibility of quick riches and a way out of an often poor existence, although the chances of success were insignificant, and the risk of being cheated and losing hung over one.[18]

The function of throwing lots as an aid in difficult and complex decisions is an old and well-documented custom. What is classical in a literary historical context is Augustine's (354–430) famous conversion scene from his autobiographical book *Confessions* (*Confessiones*) where a decision, resting on chance, was the beginning of a religious conversion situation. Certain forms of lottery oracle were accepted; above all, when they made decisions easier or could decide and settle conflicts. In the Bible, casting lots are only talked about positively in connection with important decisions.[19] *Dobblet vid gruvstugan* is a medieval custom which also continued after the Swedes went over to the Lutheran faith, even though Luther clearly did not like the Bible's view of lotteries, especially the passages mentioning priests using them.[20] His dislike of the lottery relates to the church's negative attitude to gambling in general, and dice games in particular.[21] Obviously, he did not distinguish between the lottery as organized decision-making and games of chance. The dice were used for both, and the line between them was not always easy to determine. However, the Church was convinced of the dice's negative effect on people. The propaganda of late medieval moralists against gambling, and above all dice games was extensive, and it was argued that the dice had been invented by

17 "According to religious commentators, the gambler was an exemplar of an immoral man, prone to blasphemy, idolatry and superstition," Walker 1999, 42; Schwerhoff 1995. See Ariès 2008, 11 for the problem of dying while playing a popular game. See also Ariès 2008, 69 for the Church's prohibition of dancing and gaming in the cemetery.

18 On cheating and gaming from a historical perspective, see Mehl 1981, and on dice games Tauber 1987. On the way a sinful player had the right to a church burial, see Ariès 2008, 11.

19 Mann 1994.

20 In Luther's own translation, lottery is therefore deleted from the context; Mann 1994, 51, esp. footnote 11.

21 Nedoma 2007.

the devil himself.[22] Neither Luther's negative attitude to lotteries nor the generally negative attitude of the time against gaming and dice had any significant effect on the miners' custom. The advantages of this practice were probably decisive; enabling the miner to make decisions in accordance with God's will and by this means ensuring success in the mine and at the same time avoiding arguments. That must have been the reason for the custom continuing uninterruptedly until the early eighteenth century at Stora Kopparberg.

Copper Mining and Risk-taking during the Early Modern Period

Sweden's dominant role in Europe during the seventeenth century would have been difficult to finance without copper, one of the most important metal resources in the country. So much of this metal was mined that it is estimated that Sweden produced almost two-thirds of the world's copper during this time. Iron certainly also had an important bearing on metal exports, but copper production had one decisive advantage: unlike iron production, which was spread over the whole of mid-Sweden, all the copper came from the large mine in Falun. The growth and success of its mining company, *Stora Kopparbergs Bergslag*, goes hand in hand with Sweden's era as a great power, and has imprinted itself on the people and landscape in and around Falun for hundreds of years.[23] During the seventeenth century, Falun was one of Sweden's most important and most populated cities, and the mine was by far the biggest employer with distinctive pre-industrial forms.[24] The price which the population in general and, above all, the working force at the mine paid was high. Countless collapses and accidents that took place in connection with the dangerous work killed and injured numerous miners.[25]

Several contemporary sources illustrate the people's living and working conditions in and around the Falun mine during the early modern period. In 1555, the Swedish bishop Olaus Magnus Gothus (1490–1557) wrote a comprehensive work in Latin, *History of the Northern Peoples* (*Historia de gentibus septentrionalibus*), which is a unique depiction of the life of people in the North during the sixteenth century. Mining was already an important industrial source, and in the sixth book of his work, which comprised 22 books, he describes the risks of the work under the title *On mines and mining* (*De mineris et metallis*). He sees the mines as prison camps in which the workers carried out their daily work under horrible conditions.

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22 On the devil as the inventor of dice, see Mehl 1990, 314; Also in Tauber 1987, 11. "Just as God invented the twenty-one letters of the alphabet, so the Devil invented the dice, on which he placed twenty-one points." G. de Barletta quoted in Purdie 2000, 178.

23 Boëthius 1951. Heckscher 1968, 102–104; Hildebrand 1946, 432–439.

24 Boëthius 1965; Lindroth 1955, "Bornsbrukstiden".

25 Lindroth 1955, "Gruvans historia".

Miners could be "suddenly buried under stone blocks or suffocated by the fumes and the smoke and pitifully die in the middle of their work, or the trains break down and they would be suffocated in the middle of a shaft." He mentions that only through "the defying of endless dangers and the wasting of countless human lives, could one gain entrance into the inner bowels of the mountain, Pluto's abode."[26]

Drawing a parallel between contemporary literary descriptions of the underground kingdom of Hades and work in the mines is a *topos* that is often used in connection with depictions of mining. A prominent source from the first half of the seventeenth century which describes the Falun copper mine in more depth is a travel report by a French diplomat by the name of Charles Ogier (1595–1654), who travelled in the Nordic countries and in particular in Sweden during 1634–1635 to guard French interests throughout the on-going war. The travel report he wrote in Latin was published in diary form under the title *Carolii Ogierii ephemerides sive iter Danicum, Svecicum, Polonicum* in 1656. The Swedish part of his journey is an often cited source to illustrate Sweden when it was a world power.[27] He compares the work in the Falun mine to Virgil's description of Aeneas' visit to the underworld:

> Nor is anything [than this] more appropriate to exemplify the underworld depicted by Virgil. Here are both Sisyphus and Ixion amply represented: you see some toppling stone blocks, others turning wheels, and yet more doing other heavy and awkward work, as a kind of punishment for their sins.[28]

Similar thoughts were expressed by Carl von Linné (1707–1778) in his description of the Falun mine in connection with a journey to Dalarna at the beginning of the 1770s. In the text, *Iter Dalekarlicum*, he compares the interior of the mine to both Hades and the Christian Hell: there is a "poisonous, pungent sulphurous smoke which poisons the air far around, so that you cannot go there without courage. It corrodes the earth, so that no plant may grow."[29] During the 1980s, another manuscript was discovered in the Vatican library by the aforementioned Charles Ogier, which contains a comprehensive description of his visit to the silver mine in Sala and the copper mine in Falun. The description gives a vivid picture of work in the Falun mine during the seventeenth century:[30]

> So the one who in his understanding wanted to search for a picture of this mine may imagine a dark hole, horrible, deep […] vaulted artfully in different directions, which was kept up by nothing other than itself, full of lighted fires in different places, full of smoke and sulphur and metallic smells, full of dripping water; in the bowels of the earth black

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26 Olaus Magnus 2010 (1555), book VI, quotation on 268. All translations from original texts by the author.

27 Ogier 1914 (1656). See also Appelgren' s annotated edition, Ogier 1978 (1656).

28 Ogier 1978 (1656), 72.

29 Linné 1953, 148.

30 Wis 1988.

people like little devils, the noise of hammers and iron spikes which broke the stone, the cries of the miners from those who work transporting the ore to baskets, and finally the destruction and noise that can arise if such terrible and heavy work rages.[31]

Picture 3. Hans Ranie's mine map of Stora Kopparberget from 1683 depicts a mining accident. The risks of the job and the proximity of death made miners turn to divination by dicing.

The historian Sten Lindroth characterises the work at the Falun mine during the early modern period in the following way:

Mining was always something of a hazard, sometimes fortune smiled, new rich deposits were brought to light and production improved, sometimes the better veins ran out or landslips and the ravages of water prevented access to the ore, and less copper was produced. Such more or less random factors, actual conditions at the mine, have above all been crucial for the size of copper production.[32]

31 Wis 1988, 10.

32 Lindroth 1955, 56. This and other translations mine unless otherwise indicated.

What Lindroth comprehends as "random factors" was given a different significance by people during the early modern period, and illustrates the miners' attitude not only to chance but also to luck and profit, accident and death. Sudden reversals in connection with success or failure in mining have been hasty and unpredictable throughout the centuries. However, people did not speak about chance, seeing a connection between mystical powers and the profitability of the mine. Mining was dangerous and cruel, with constant unexpected cave-ins and death near at hand, which inclined people to trust to higher powers or various forms of superstition. Contemporary documents illustrate that people during those times attributed random incidents to divine intention or the work of supernatural powers.[33]

From this perspective, it seems logical to believe that it is possible to affect this intention or power; for example, through magical or religious practices. People had another conception of events that we would today attribute to chance during the Middle Ages and into the early modern period, one which in its allegorical form is called Lady Luck. The Latin name *fortuna* really only means happiness, but it includes both happiness and the lack of it, and thereby meant both good and bad luck.[34] During the seventeenth century, Lady Luck was still seen as a "raging, shameless lady" and was generally depicted as a woman standing on a wheel which symbolizes the abrupt shifts in happiness.[35]

Mining documents from that period illustrate how people had a quite clear awareness of when they were actually putting themselves at risk with the aim of making a profit. The first regulated safety measures on the part of the Board of Mining (*Bergskollegiet*) take shape at the beginning of the seventeenth century. The Board of Mining was a central agency which worked between 1637 and 1857, with responsibility for directing and controlling the mining industry in Sweden. What we today call risk insight became fully developed and distinctive during the seventeenth and eighteenth centuries. Today, we make a clear distinction between risk and danger. The question of whether an action is risky or dangerous is answered by the one carrying it out. If you are aware of the damage which can happen in connection with a certain action, you are in a risky situation. In a dangerous situation, on the other hand, you are unaware of the danger. We take a risk when we know that an unforeseen event can take place, and can even calculate the risk of a particular action.[36] The term risk came into use during the fifteenth century in Italy in maritime trade where it was applied in connection with the maritime insurance system.

33 This is further discussed in Ridder 2013a.

34 Savin investigates the concept of *fortuna* in Sweden during older times, pointing out that a similar sense of the Latin word *fortuna* is also implicit in "the Swedish term *lycka* which in older times played an important role in people's understanding of the world, life and themselves," Savin 2011, 11.

35 Jesaias Rompler von Löwenhalt (1605–ca. 1672) quoted in Krause 2010, 1.

36 Luhmann 1991. For a smoker, cancer is a clear risk when lighting a cigarette. On the other hand, a non-smoker who comes in contact with smoke is rather in a dangerous situation than a risky one.

When risk was dealt with rationally, a mathematical calculation of risk followed, and theories of probability were developed during the seventeenth century.[37]

In a world where everything is preordained by God, on the other hand, no probability calculations are needed, and the relation between risk and danger therefore lead directly or indirectly to the problem of the world's absolute randomness, or contingency. A possible reaction is that people tried to protect themselves against risky situations by dealing with them in some way; that is, they expected contingent events instead of passively letting God's providence decide the outcome of a dangerous situation. How the miners at the Stora Kopparberg dealt with and related to this problem will now be described in detail.

Oracles and Other Apotropaic Practices

Throughout all times and in all cultures, people have tried various forms of prediction and strategies to affect fate. Divinatory acts were supposed to influence instances which were thought to have an impact on one's own fate; for example, spirits, demons and ancestors. Lottery oracles belong to the same research area as magic rituals, and when I talk about magic here, I mean from a general perspective "a system of conceptions and attitudes that aim to place the visible everyday world in relation to a space outside this world."[38]

Oracles and oracle games are considered to be a kind of medieval and late medieval everyday magic and superstition, and oracle literature is one of humankind's oldest literary genres. An oracle has two main functions, to see into the future, and to help with decision-making, which is principally based on predictions about the future.[39] During the Middle Ages and the early modern period, the borders between magical thinking, alchemy and medicine were flexible, and the popular medical texts of the time often contain various hybrid forms. A magical worldview characterized human thinking, and was weakened only in connection with the rise of experimental science. In the framework of a magical worldview, there is no chance. Nothing happens without there being a meaning, God's plan, or at least the intention expressed by some form of higher power. Simple and unassuming events were interpreted in a larger context, the throw of a dice, or the dealing of cards, as much as the flight patterns of birds or patterns in coffee dregs. Fateful events like war and disease or storms and death were also understood as a part of a larger plan of action and salvation.[40] At the end of the sixteenth century in Sweden, the new Lutheran faith was declared in the entire country, and the Church

37 Hahn 1998.

38 Definition according to Dillinger 2007, 13.

39 In this context, alchemy is sympathetic: the sympathetic effect of different materials and things, an in-vogue term from the turn of the eighteenth century, in the sense of "with each other in a secret relation".

40 For a discussion of the Swedish view, see Sandén 2010, 97, 104.

fought against anything perceived as belonging to Catholic doctrine. The Lutheran Church counted not only the old Catholic rites but also blessings, spells or magical acts as Catholic doctrine.[41] The magical exercises and their function normally aimed to resolve and above all deal with both practical and existential problems.[42]

Therefore, during the late Middle Ages, magic was not prohibited in principle, but only the form called black magic or wizardry, which was about hurting people by using sorcery. In Germany, for example, only someone who hurt others by black magic (*Schadenzauber*) incurred the death penalty. Those who could not be proved to have used some kind of black magic or *maleficium* would be treated as charlatans instead. In another legal context, someone who had clearly benefited from someone else through magic (this could relate to curing someone who was sick or protecting crops through magical means) could be exempt from legal consequences.[43] In Sweden, however, any form of witchcraft was considered a crime in the late sixteenth century.[44]

The miners' exposure to danger can be compared to another social group with similar circumstances, that is, soldiers. Soldiers in seventeenth-century Germany tried to prevent a quick death on the battlefield by magical procedures. One example of this magical thinking is the so-called "*Passauer Kunst*", a superstition that was intended to make soldiers invulnerable on the battlefield. Why it is called the *Passauer Kunst* is not clear, but it has been suggested that the name is linked to a hangman from the town of Passau who about 1611 made notes with secret signs on them that he sold to soldiers. The soldiers sewed the notes into their uniforms or ate them which, according to legend made them "frozen" or "stuck" as it was called in German (*Festmachen*, that is, stick, stick on), invulnerable and protected against wounds by gunshot, cutting or stabbing. The *Passauer Kunst* became a widespread superstition among German soldiers during the Thirty Years' War, since it was rumoured that the notes from the hangman in Passau really worked.[45]

In the same way as soldiers during the Thirty Years' War tried to protect themselves from death through magic, miners also practised various so-called *apotropaic* rituals. The Greek word *apotrépein*, meaning "to ward off", forms the basis of the term, which is used in research on religion to describe magic rituals to prevent accidents and death. These magic rituals are symbolic rites which work, in a modern way of speaking, as preventers of accidents. These include amulets, oracles, inscriptions and so on. In Swedish mining history and above all at Stora Kopparberget, miners observe a particular attitude to different types of mountain

41 For a further discussion about the view on magic and magical practices during the seventeenth and eighteenth centuries in Sweden, see Oja 1999 and Lindstedt Cronberg 2010.

42 Knoblauch 1996, 226. For a further discussion of the characteristics of a magical worldview, see Birkhan 2010, chapter II.

43 Funke 2009, 18.

44 Oja 1999, 62–70.

45 Funke 2009. Also compare other superstitious practices that soldiers were devoted to.

spirits, both when they were inside and outside the mine. Correct behaviour on the part of the miner, characterized by respect for these spirits, would increase the chance of surviving this work and not being taken by a sudden and unpredictable death.[46] Sten Lindroth writes of the miners' piety and superstition that in "the continent's mines a distinctive mountain religion coloured by mysticism played a very substantial role. Our own miners used to content themselves with placing their work under the Lord's protection based on their evangelical faith, without further comment."[47]

The quote reminds us of Luther's advice to soldiers facing their dangerous work and how he addresses their superstitious attitude. In *Ob Kriegsleute auch in seligem Stande sein können* (*How soldiers can enter a state of mercy*) from 1526, he deals with the question of whether participation in war can be united with a Christian conscience. Luther, who was really against the idea of a holy war, accepted it in cases where soldiers were defending their own country. He certainly rejected every form of idolatry as sinful behaviour, but included the idea that the superstitions of soldiers served the Christian need to ward off danger. Otherwise, he recommended saying one *Credo* and one Lord's Prayer, but then to give body and soul to God, an attitude which seems similar to the "resolute evangelical faith" of the miners which Lindroth speaks of.[48]

Numerous forms of apotropaic rites and divination practices were therefore public property during older times. They were comprehensive and widespread among different population groups and social strata. People used blessed hosts as frequently as spices or bible texts in various material forms. Amulets were in use in the same way as prayers or spells for specific purposes and situations, and formed part of everyday magic and folk piety. A clear difference between folk medicine and experimental science started to take shape during the seventeenth century, although one must imagine this as an elitist mindset during this time. Distinguishing between the natural world and the supernatural, superstitious ones was an attitude found among few enlightened learned people. At the same time, one is able to observe an increased production of texts like witchcraft books and similar magical instructions throughout the second half of the seventeenth century.[49]

Mining was seen as a risky venture in all ages. Sometimes rich new seams were found which could support the miners for some time, and then their income was very good. But quite often contemporary literature bears witness to dry seams, mine collapses or water ravages which prevented the retrieval of ore, so that miners produced much less. Copper ore mining could even become unprofitable during

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46 Åmark 1951; Tillhagen 1988. For the prohibition of swearing in the mine, see Kristiansson 1996, 24.

47 Lindroth 1955, 202.

48 Luther 1982, 220. On Luther's view of soldiers' superstitions, see Funke 2009, 20. On the expected negative attitudes of Protestants and above all Swedes as apotropaic rites in the form of the *Passauer Kunst* during the Thirty Years' War, see Funke 2009, 22, 29.

49 Daxelmüller 1996.

certain periods and consequently shut down. The general opinion was that chance had nothing to do with people's opportunities to find treasure in the earth. The common understanding was that the conditions for making significant finds were entirely dependent on God's providence and merciful intervention. It was important not to ascribe success to one's own wisdom. Believing that one could find God's gifts based on one's own power would have been seen as vanity, a dangerous trait, since signs of arrogance could be expected to be incur punishment by God with accidents and death. If unforeseen rich ore deposits were found, it is carefully pointed out in the old sources that the find was owing to "God's strange blessing was detected in Stora Kopparberg Mine."[50] Many superstitious practices are linked to ore finds. In Germany, for example, you meet a distinctive, mystical mountain religion. According to old folk beliefs, the mountain's evil powers would guard its, and would pre-ordain which families and which generations would make certain finds. If the wrong person made the find, things would go badly and, not infrequently, death was a common penalty. The same holds if the finder is not secretive about the find for a determined period, as the powers demand. If a lode is about to be exhausted, it is usually explained by sinful or unworthy behaviour having affected the higher powers. It is frequently argued that the finds "become unfruitful" because of "people's vices".[51]

The general understanding was, therefore, that fate was predetermined by God's providence. The idea of accident, sickness or war being God's retribution and punishment for man's sins is deeply rooted in contemporary thinking.[52] If things were going well for the people, it was a sign of their virtuous lives, while happiness was God's reward for this effort. If things went badly or people were struck by misadventures, accidents and death, it was a direct result of living sinfully. But even a person in the seventeenth century must have had a perception of the omnipotence of chance, especially if they were involved in mining in some way.

The history of the Falun mine bears witness to the countless attempts to seek the possibility of a good ore find, of how capricious happiness was, and how quickly a find could be mined out. The seventeenth century has been characterized in Swedish mining history research as "the century of great collapses" as regards mining labour at Stora Kopparberget. They point to the frequent collapses and continuous accidents which, especially at that time, cost the lives and health of so many miners.[53] In comparison to Germany, for example, one observes that mining in Sweden was not characterized by the same safety measures. Rammelsberg is a mine near the town of Goslar in the German region called the Harz in Lower Saxony. This mine was an important medieval German copper mine and was

50 Lindroth 1955, 204.

51 Söderberg 1932, 15.

52 Sandén 2010, 104.

53 Lindroth 1955, 103.

in many respects a role model for Stora Kopparberget.[54] While in Rammelsberg they built strong shoring to prevent collapses to a far greater extent, in the Falun mine they contented themselves with simple tunnels and rooms that were seldom even equipped with timbering. This is related to the location of the deposit in Falun where, unlike Rammelsberg, it is not located within a mountain but could only be reached from above, so it was not possible to build shafts from the side of the mountain, into the deposit. Instead the miners worked open cast, which was then dug down. After that, they worked inwards under great roofs which were widened into great constructions to extract as much ore as possible. Leaving pillars and walls behind from a safety standpoint in such a situation was never really consistently done. When the mine was once again affected by excessive collapses during the seventeenth century because of this thoughtlessness, people started to complain about their ancestors' lack of care of the mine. It was as late as the beginning of the seventeenth century that the first ordinance on mine safety came, recommending more thoroughly planned mining operations. Although these safety measures were soon adopted and carried out, the lack of care of the ancestors could not be undone in time.

During this time, people obviously had an appreciation of risk, even if they did not use that word, talking instead about "hazard" in risky or dangerous contexts, a word taken from the gaming background. The rooms that were especially risky to work in were called "hazardous" (*hazardelige*) chambers, where work was forbidden by the Board of Mining because of the impending risk of collapses. The question of whether the mine should be secured with walls or by timbering was also discussed at length. The general position was that the latter "would put the whole mine in jeopardy" (*satte hele grufvan i hassard*) because of the fire risk from wooden constructions. Severe punishments were handed out to miners who were guilty of sloppy work which could put the whole mining operation at risk, for example, irresponsibility with fire. The threat of punishment hung heavily over the person who fell into the temptation to break the rich ore clearly visible in the safety supports left behind.[55]

54 For a discussion about the connection between Rammelsberg and Stora Kopparberg, see Ridder 2014, 256. Rammelsberg as a role model for Stora Kopparberg, see Söderberg 1932, 59. For the mining history of Rammelsberg, see, for example, Kraschewski 1997 and Liessmann 2010, with further references.

55 Boëthius 1951, 376–377.

Conclusion: Dicing towards Death

During older times, ecclesiastical jurisdiction, just like secular courts, used dice for judging where a life was at stake in various situations,[56] as well as for resolving contention and disputes. In Swedish, we know of the words decimate and decimation, which are related to the Latin word for ten, *decem*. Decimation originally denotes a military punishment frequently used in the Roman army on military units that had been guilty of mutiny or cowardice before the enemy. In order not to execute the whole unit and thereby weaken the army, they chose to execute every tenth man by letting the lottery decide who would die. *Decimatio* as a punishment was used in exceptional cases, and primarily when it was impossible to find out whom in a group was responsible for a reprehensible act. Sometimes the lottery was used to choose every twentieth (*vicesimatio*) or every hundredth (*centesimatio*) soldier for the death penalty, and the others were punished more leniently. To maintain discipline, particularly in connection with mutiny or revolt, this punishment was also used in war-related situations after Roman times, and is also known in the Swedish military history context. Gustav Adolf decreed decimation as the punishment for desertion or the like in the Articles of War from 15 July 1621 (article 74). This punishment was probably used even earlier in Sweden.[57]

Picture 4. One of the most famous depictions of the horrors of the Thirty Years' War come from Jacques Callot (1592–1635). His series *Les Misères et les Malheurs de la Guerre* ("The Miseries and Misfortunes of War") include "The Hanging", the punishment of the unruly soldiers who had terrorised the civilian population.

The dice worked as an instrument for setting the level of punishment, which is also documented in legal documents from medieval German towns. The delinquent could throw three dice, and their score decided how great the punishment would

56 See Whitman 2008, chapter I, about the role of chance in connection with easing the judge's sense of moral responsibility, especially when it comes to the decision to execute someone.

57 On decimation in Sweden, see Wedberg 1935.

be.[58] In Sweden, civil courts used dice and lotteries to decide who was guilty of murder and assault where several perpetrators were involved during the early modern period up until the nineteenth century. If the suspects blamed one another and it was impossible to decide who had done what, the dice decided the matter.[59] People's attitudes during the early modern period were characterized by an Old Testament attitude that throws of the dice were a way of letting God judge. They referred to lotteries as divine judgement, preferably with a link to the mottos of the Book of Proverbs (16:33): "The lot is cast into the lap, but the decision is the Lord's alone." [60]

After the Enlightenment, the attitude to this method started to change. Certainly, gambling on life and death continued; it was however no longer literally referred to as God's will being discovered through the dice, but rather to "the love of human life." If the court did not know which of two suspects was guilty of murder or assault on someone, and both blamed one another, the recommendation was to let the dice decide the matter. The general understanding was that it was more humane to let the dice decide, since murder only demanded the execution of a single person as retribution, not the death of both suspects.[61]

Chance was functionalized with the help of dice, not only in connection with justice. And in many ways, a successful approach to avoiding arguments and conflicts has apparently been to make use of a ritualized form of dice game. *Dobblet vid gruvstugan* at Stora Kopparberg was one way of making important decisions which otherwise would cause conflicts among the miners.[62] They joined together after the New Year before the mining court, threw three dice, calculated the score, and made a list in which the order of the different mining gangs was related to the score. The team that got the highest score had first access to the first mining chamber. The team with the next highest score got the second mining room, and so on. The success or adversity of every team, the triumph or failure of every miner, and in some cases accident and death, could in this way be attributed to God's justice, and not be blamed on a single person who had drawn up a particular roster. At this meeting, they also put the teams together in order to prevent any destructive group formation.[63]

In Gisle Jacobson's oracle book, *A small pastime*, the miner's dice game is the basis for letting the player/reader draw lots. One cannot know with certainty whether the book only had an entertainment purpose or if there were more serious intentions on the part of either the writer or miners regarding this game and the

58 Tauber 1987, 29.

59 Wedberg 1935; Nilson 1997.

60 Wedberg 1935, 26.

61 Wedberg 1935, 26.

62 For the way in which conflicts negatively affected the result of mining during this time, see Ridder 2014, 256.

63 Ridder 2013b, 326.

oracle associated with this practice. Thinking of the dangerous work of the miners and the necessarily related feelings of anxiety and insecurity, the divine events associated with such a book can help – either in jest or seriously – to manage the individual crisis every miner found himself in.

The book was published around 70 years before the greatest collapse occurred in the mine in the year 1689. The decade before was characterized by the Board of Mining's attempt to get the more and more frequent collapses under control. The miners were well aware of the neglect of mountain safety by previous generations, and they must have seen working under such conditions as a massive threat to their lives and health. This feeling of powerlessness and helplessness has traditionally led to people seeking help from magical strategies to channel their anxiety, and above all to increase their chances of survival. The haphazardness of the throw of the dice was functionalized at Stora Kopparberg in order to avoid quarrels, and thereby increase the profit of the mine. It also helped to allocate the risk of dying and the prospect of becoming rich equally between the miners. Making use of dice rolls in such a situation appears to be an attempt to avoid chance, but from a modern perspective and considering the fact of contingency, it is more like a densification of it. Miners used dice because they were afraid of chance; they used them as a sort of rescue attempt to protect them from chance and to keep some kind of illusion of autonomy in the face of the haphazardness of death.

References

Ariés, P. 2008. *The Hour of Our Death*: *The Classic History of Western Attitudes towards Death over the Last One Thousand Years*. Trans. H. Weaver. New York: Random House.

Biographia Cuprimontana, Archive of Stora Enso AB, Archive Centre of Dalarna, Falun, Sweden.

Birkhan, H. 2010. *Magie im Mittelalter*. Munich: C. H. Beck.

Boëthius, B. 1951. *Gruvornas, hyttornas och hamrarnas Folk: Bergshanteringens arbetare från medeltiden till Gustavianska tiden*. Stockholm: Tidens.

Boëthius, B. 1965. *Kopparbergslagen fram till 1570-talets genombrott: Uppkomst, medeltid, tidig vasatid.* Uppsala: Almqvist & Wiksell.

Bolte, J. 1925. Zur Geschichte der Punktier- und Losbücher. *Jahrbuch für historische Volkskunde* 1, 184–214.

Böhm, F. 1932/1933. Losbücher. In H. Bächtold-Stäubli & E. Hoffmann-Krayer (eds.) *Handwörterbuch des deutschen Aberglaubens* 5. Berlin: de Gruyter. 1386–1401.

Clark, G. 1999. *Betting on Lives: The culture of life insurance in England, 1695-1775*. Manchester: Manchester University Press.

Clarke, L. & J. F. Short Jr.. 1993. Social Organization and Risk: Some Current Controversies. *Annual Review of Sociology* 19, 375–399.

Collijn, I. 1943. *Sveriges Bibliografi 1600-talet: Bidrag till en bibliografisk förteckning*. Uppsala: Almqvist & Wiksell.

Daxelmüller, C. 1993. *Aberglaube, Hexenzauber, Höllenängste: Eine Geschichte der Magie*. Munich: Deutscher Taschenbuch Verlag.

De Brun, F. 1924. Strödda anteckningar rörande Stockholms Storkyrka. *Holmiana et alia* 5:2-3, 820–847.

Dillinger, J. 2007. *Hexen und Magie: Eine historische Einführung.* Frankfurt am Main: Campus.

Funke, N. 2009. “Naturali legitimâque Magica” der “Teufflische Zauberrei”? Das “Festmachen” im Militär des 16. und 17. Jahrhunderts. *Arbeitskreis Militär und Gesellschaft in der Frühen Neuzeit e.V. Militär und Gesellschaft in der Frühen Neuzeit*. *Themenheft Militär und materielle Kultur in der Frühen Neuzeit* 13 (1), 16–32.

Hahn, A. 1998. Risiko und Gefahr. In G. v. Graevenitz & O. Marquard (eds.) *Kontingenz.* Poetik und Hermeneutik XVII. Munich: Wilhelm Fink. 49–54.

Haug, W. 1995. O Fortuna: Eine historisch-semantische Skizze zur Einführung. In W. Haug & B. Wachinger (eds.) *Fortuna*. Tübingen: Niemeyer. 1–22.

Heckscher, E. 1968. *Svenskt arbete och liv: Från medeltiden till nutid*. Stockholm: Bonniers.

Hildebrand, K.-G. 1946. *Falu stads historia 1641-1687: Akademisk avhandling*. Falun: Falu Nya Boktryckeri AB.

Jacobsson, G. 1613. *Tidhfördriff: ett litet tidhfördriff, der medh man kan fördröye tidhen, och affslå onde tanckar, som letteligen kunne komme när man intet tager sigh före, och må brukas när tiden så medhgiffs / stält och vthdragin wid Kopperberget af Gisle Iacobson och af trycket vtgångin den 2. septembr. 1613*. Stockholm.

Kaiser. G. (ed.) 1983. *Der tanzende Tod: Mittelalterliche Totentänze*. Frankfurt am Main: Insel.

Knoblauch, H. (1996). Vom Wünschelrutengehen zur Radiästhesie. Die Modernisierung der Magie. In *Jahrbuch für Volkskunde NF* 19, 221–240.

Kraschewski, H.-J. 1997. Zur Arbeitsverfassung des Goslarer Bergbaus am Rammelsberg im 17. und zu Beginn des 18. Jahrhunderts. In H.-J. Gerhard (ed.) *Struktur und Dimension 1: Mittelalter und frühe Neuzeit*. Vierteljahrschrift für Sozial und Wirtschaftgeschichte 132. Stuttgart: Franz Steiner. 407–444.

Krause, B. 2010. “Ein rasend freches Weib”: Geschichte von der Göttin mit dem Rade. In S. Finkele & B. Krause (eds.) *Glück – Zufall – Vorsehung: Vortragsreihe der Abteilung Mediävistik des Instituts für Literaturwissenschaft im Sommersemester 2008*. Karlsruhe: KIT. 1–48.

Kristiansson, S. 1996. Rättskipning i teori och praktik: En studie vid Stora Kopparberget 1650-1682. In *Bergslagsarkiv: årsbok för historia och kulturhistoria i Bergslagen*, 21–32.

Lagergren, H. 1913. *Jacob Ingelssons berättelse om Stora Kopparberget år 1716*. Göteborg: sine nomine.

Lindroth, S. 1955. *Gruvbrytning och Kopparhantering vid Stora Kopparberget intill 1800-talets början.* Uppsala: Almqvist & Wiksell.

Lindstedt Cronberg, M. 2010. Guds folk och djävulens anhängare: Onda praktiker och kampen mot magi i reformationens tidevarv. In C. Stenqvist & M. Lindstedt Cronberg (eds.) *Dygder och laster: Förmoderna perspektiv på tillvaron*. Lund: Nordic Academic Press. 115–134.

Linné, C. v. 1953. *Linnés Dalaresa Iter dalekarlicum jämte Utlandsresan Iter ad externos och Bergslagsresan Iter ad fodinas*. Stockholm: Geber.

Luhmann, N. 1991. Verständigung über Risiken und Gefahren. *Die politische Meinung* 36 (258), 86–95.

Luhmann, N. 2005. *Soziologische Aufklärung 5: Konstruktivistische Perspektiven*. Wiesbaden: VS.

Luther, M. 1982. Ob Kriegsleute auch in seligem Stande sein können. In K. Bornkamm & G. Ebeling (eds.) *Ausgewählte Schriften. 4: Christsein und weltliches Regiment*. Frankfurt am Main: Insel. 173–222.

Mann, H. H. 1994. Missio sortis: Das Losen der Spieler unter dem Kreuz. In H. Holländer & C. Zangs (eds.) *Mit Glück und Verstand*: *Zur Kunst- und Kulturgeschichte der Brett- und Kartenspiele, 15.–17. Jahrhundert*. Katalog zur Ausstellung im Museum Schloß Rheydt vom 26. Juli bis 30. September 1994. Aachen: Thouet. 51–69.

Mehl, J.-M. 1981. Tricheurs et tricheries dans la France médiévale: L'exemple du jeu de dés. *Réflexions historiques* 8, 3–25.

Mehl, J.-M. 1990. *Les jeux au royaume de France du XIIIe au début du XVIe siècle*. Paris: Fayard.

Nedoma, R. 2007. Würfel und Würfelspiel. In H. Beck, D. Geuenich & H. Steuer (eds.) *Reallexikon der Germanischen Altertumskunde* 34. Berlin: Walter de Gruyter. 255–259.

Nikula, O. & S. Nikula. 1987. *Åbo stads historia 1 (1521-1600)*. Åbo: Åbo stad.

Nilson, T. 1997. Tärningskast med livet som insats. *Ale: Historiskt tidskrift för Skåne, Halland och Blekinge* 1*,* 22–28.

Ogier, C. 1914 (1656). *Från Sveriges storhetstid: Franske legationssekreteraren Charles Ogiers dagbok under ambassaden i Sverige 1634-1635*. Trans. and ed. S. Hallberg. Stockholm: Norstedt.

Ogier, C. 1978 (1656). *Från Sveriges storhetstid: Franske legationssekreteraren Charles Ogiers dagbok under ambassaden i Sverige 1634-1635*. Ed. S. Appelgren. Stockholm: Nordiska museet.

Oja, L. 1999. *Varken Gud eller natur: Synen på magi i 1600-talet och 1700-talets Sverige*. Stockholm: Symposion.

Olaus Magnus 2010 (1555). *Historia om de nordiska folken*. Vilnius: Gidlunds.

Pesch, A. 2003. Orakel. In H. Beck, D. Geuenich & H. Steuer (eds.). *Reallexikon der Germanischen Altertumskunde* 22. Berlin: Walter de Gruyter. 134–139.

Purdie, R. 2000. Dice-games and the Blasphemy of Prediction. In J. A. Burrow & I. A. Wei (eds.) *Medieval Futures: Attitudes to the Future in the Middle Ages*. Woodbridge: Boydell. 167–184.

Ranie, H. 1957 (1683). *Stora Kopparberget*: *En gruvkarta av Hans Ranie från 1683.* Falun: Stora Kopparbergs Bergslags AB.

Ridder, I. 2012. Recension: RIKARD WINGÅRD, Att sluta från början: tidigmodern läsning och folkbokens receptionsestetik. *Sjuttonhundratal: Nordic Yearbook for Eighteenth-Century Studies*, 175–178.

Ridder, I. 2013a. För alt det ondt är/ så skal tu rädas/Och emot alt gott/ så skal tu glädias/: Emotionernas didaktiska funktion i en moralisk tärningsspelbok för bergsmän från början av 1600-talet. In I. L. Ångström Grandien & B. G. Jansson (eds.) *Fornstora dagar*. Falun: Högskolan Dalarna. 163–182.

Ridder, I. 2013b. Fortune Telling, Gambling and Decision-Making at Stora Kopparberget in the Early Seventeenth Century. In B. G. Jansson (ed.) *The Significance of World Heritage: Origins, Management, Consequences*. Falun: Högskolan Dalarna. 317–332.

Ridder, I. 2014. Das Losbuch *Ett litet Tidhfördriff* des Grubenschreibers Gisle Jacobson und das mittelalterliche *dobbel*-Spiel. In M. Teichert (ed.) *Sport und Spiel bei den Germanen: Nordeuropa von der römischen Kaiserzeit bis zum Mittelalter.* Ergänzungsbände zum Reallexikon für Germanische Altertumskunde Band 88. Berlin/Boston: De Gruyter. 245–306.

Sandén, A. 2010. Abraham Angermannus och de helgade medlen. In C. Stenqvist & M. Lindstedt Cronberg (eds.) *Dygder och laster*: *Förmoderna perspektiv på tillvaron*. Lund: Nordic Academic Press. 95–114.

Savin, K. 2011. *Fortunas klädnader: Lycka, olycka och risk i det tidigmoderna Sverige*. Lund: Sekel och förf.

Schwerhoff, G. 1995. Der blasphemische Spieler – zur Deutung eines Verhaltenstypus im späten Mittelalter und in der frühen Neuzeit. *Ludica* 1, 98–113.

Söderberg, T. 1932. *Stora Kopparberget under medeltiden och Gustav Vasa*. Stockholm: Pettersson.

Tauber, W. 1987. *Das Würfelspiel im Mittelalter und in der frühen Neuzeit*: *Eine kultur- und sprachgeschichtliche Darstellung*. Europäische Hochschulschriften 959. Frankfurt am Main: Peter Lang.

Tillhagen, C.-H. 1981. *Järnet och människorna: Verklighet och vidskepelse*. Stockholm: LTs förlag.

Tillhagen, C.-H. 1988. *Malmsägner och gruvskrock*. Grycksbo: Strålin.

Walker, J. 1999. Gambling and Venetian Noblemen c. 1500-1700. *Past and Present* 162, 28–69.

Wedberg, B. 1935. *Tärningkast om liv och död: Rättshistoriska skisser.* Stockholm: Nordstedt.

Whitman, J. Q. 2008. *The Origins of Reasonable Doubt: Theological Roots of the Criminal Trial*. New Haven/London: Yale University Press.

Wis, C. 1988. En relation från 1600-talet om gruvor i Norden. *Med hammare och fackla* 30, 4–21.

Zollinger, M. 1996. *Bibliographie der Spielbücher des 15. bis 18. Jahrhunderts*. *Erster Band: 1473-1700*. Stuttgart: Hiersemann.

Åmark, M. 1951. Gruvskrock och gruvböner. *Med hammare och fackla* 19, 129–140.