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STENOGRAPHIC MUSIC NOTATION AS A MUSICAL MEMORY AID AMONG DULCIMER PLAYERS IN SWITZERLAND'S ALPINE REGION

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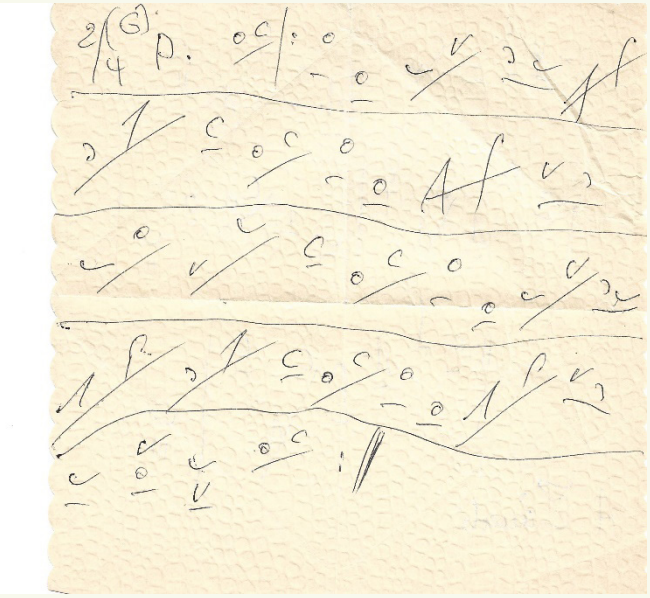
Introduction: Stenographic Notations Discovered

During a research project to digitise and preserve an archival corpus at the Centre for Appenzell and Toggenburg Folk Music (Wey 2022), I came across a curious copy of a napkin covered in symbols. It was clear from its context and the conventional symbol for a measure, 2/4, in the upper left corner that it must be a form of musical notation. The conclusion was fascinating: some folk instrument players who were active in the late nineteenth and early twentieth century must have had a self-invented means of writing music. With the help of Erwin Sager, retired schoolteacher and archivist, I was able to attribute the stenographs to dulcimer players.

This came as a surprise: in my years of fieldwork and studying archival resources in the region I had not heard of such a system of music writing. This begged the following questions. What was the function of these notations? Who made them and who knew how to read them? What role did the system play in comparison to staff notation and would it have at least been familiar to the same musicians whether or not they used it in their own performance practice? Finally, of course, how should the symbols be interpreted and transcribed into standard notation? In the same archive, more such notations were located, written in a musical shorthand comprised of a small set of easy-to-write symbols. This discovery of a stenographic music writing practice allows for a fresh investigation into the practice of music stenography among folk musicians.

I aim, through translating and contextualising this personal music writing of a few folk musicians, to better understand the sustainability of small-scale, localised music traditions that persisted outside the canon of formal music education. The stenographic system allowed musicians, in the present case primarily dulcimer players, to outsource memories of sound even in unprepared situations. Two dulcimer players from different generations, both named Jakob Alder, can be identified as authors of notations. Examples from both sources will serve as subjects for a detailed analysis of the writing system. To avoid confusion between the two musicians of the same name, I will introduce them below and add their respective dates of life whenever one of them is mentioned.

Figure 1. Stenographic music notation on a napkin. Unsigned, attributed to Jakob Alder (1915–2004).



Stenography, or shorthand, is an abbreviated, symbolic writing method that increases the speed and brevity of writing compared with standard musical notation. Abandoning the conventional staff system in favour of differently shaped lines indicating pitch, register, interval and duration, music stenographers worked to capture instrumental performances in real time that would otherwise have been lost forever due to a lack of recording technology (Pierce 2017: 121). Even though numerous music-stenographic treatises appeared between 1868 and 1950, stenography by composers and musicians did not survive (Pierce 2017: 123). We therefore still have very limited knowledge of the application of music stenography, especially the practical use of stenographic symbols regarding musical parameters in the context of specific musical traditions[1]. It is striking that the many examples of proposed systems for musical stenography are exclusively preserved in treatises and not in practical application.

There seems to be a contradiction between the creative drive to invent alternative ways of writing and the lack of their implementation in practice. This is reminiscent of the many systems of transcription that have been proposed for ethnographic musical transcription: few of them have found practical application. A central objection to using new forms of notation is their readability. If anyone who wishes to read the music must first learn a new writing system, the process is inevitably much less efficient than using the staff notation almost universally known among musicians. The quasi-universal recognition of staff notation constrains new notation methods, even if an alternative system would theoretically be better suited to represent a particular musical tradition or genre. Additional diacritical signs are easier to establish. They can be added to an existing conventional notation. Of the signs proposed for ethnographic transcriptions by Abraham and Hornbostel in 1909, some have become widely known over the past century[2]. Many transcribers and composers began to use them, to the point where some of the newly invented signs became familiar among professional performers.

The present source is of particular interest in two ways: firstly, it constitutes a rare surviving set of late nineteenth- and early twentieth-century European music stenographs and, secondly, the stenographs in the set are not necessarily derived from staff notation, i.e. they are not auxiliary writings by composers who were regularly producing writings in classical staff notation. Performers of regional musical traditions practised transcription as a means of remembering melodies. Whatever knowledge of music theory they possessed certainly informed the development of their musical shorthand. With this in mind, these notations are not to be studied primarily in terms of composing and compositional techniques, but in a broader context of oral and written tradition and memory supports for musical memory. Music stenographs, as Pierce (2017: 122) notes, found no uses in ethnographic fieldwork and stenographers were only interested in notating the same sounds as staff notation does[3], but the present provides an example with at least an expansion of the musical context for stenography. Although these stenographs do not exactly count as ethnographic transcriptions, they aim to represent a style other than Western art music.

The primary source for this shorthand is the unpublished research of Margaret Engeler (1933–2010), who studied the history of traditional music in the Appenzell region around 1980. She published some results in her dissertation in 1984. Most of her sources still lie unpublished in her literary legacy at the Centre for Appenzell and Toggenburg Folk Music in Gonten (Engeler 1988). Since the sound recordings from Engeler's archive are susceptible to data loss and are in many cases unique, they were inventoried and digitised in 2021. It was while evaluating these documents in the Engeler Collection that the notes discussed here came to light.

Margaret Engeler's Unpublished Research Notes

In an unpublished thesis by ethnomusicology student Margaret Engeler (Engeler 1979), there lies a key to reading the musical stenographs: a short series of stenographic notations juxtaposed with the same pieces in conventional staff notation. Engeler simply printed the notation without any comment in the last chapter of her thesis (Engeler 1979: 152). The only published example can be found in Engeler's dissertation (1984: 175) and is not for dulcimer but violin. She comments, 'With the self-invented stenography, the string musicians write down their musical ideas. What is heard or just improvised is immediately noted down'[4]. When Engeler refers to 'string musicians', she includes the instruments that typically participate in traditional Swiss string ensembles: violin, dulcimer, cello, double bass and sometimes accordion. Even though Engeler acquired these notations in the 1970s, she did not carry out further evaluations. Her publications have also received relatively little attention from musicologists and her field notes, archived together with sound recordings from her fieldwork, remained largely untouched until 2021.

Engeler printed copies of six stenographs. I have so far been unable to locate their originals among her research and literary materials at the aforementioned archive. Four additional examples are written on the front and back of two napkins, like the notation shown in Figure 1. None of the examples refer to a date of transcription. Multiple factors, however, suggest that the stenographic method was likely developed in the nineteenth century. One factor is that the stenographic method was used to transcribe a type of string music which came to prominence in the late nineteenth century. Another is that the stenographic method appears to make use of a rhythmic notation derived in part from calculational symbols utilised by nineteenth century farmers of the Appenzell region (cf. Meyer (1895), see below). Furthermore, barring the possibility that Jakob Alder (1888-1956) invented the stenographic method on his own in the very early twentieth century, it is likely that he adapted a system which had already been in use at the end of the previous century.

Some notations were signed by musicians, others are anonymous. Those signed belong to players of the hammered dulcimer, a traditional folk music instrument of the Appenzell region characterised by its trapezoidal construction and consisting of a resonance box with strings stretched across its top, which are played with wooden sticks. Up to five strings are used for a single note (Krucker 2013). The tunings of the instruments vary: some players create their own tuning by placing and adjusting the strings. Around the Alpstein Massif, hammered dulcimers play a role in the musical tradition both as a solo instrument and in the ensemble of the so-called 'Appenzell string music', with cello, violin and double bass. Several of these ensembles gained recognition beyond the region and performed music as a source of income. While the hammered dulcimer became famous through Appenzell string music ensembles in the course of the nineteenth century (Manser 1986: 121–3), sources document the existence of the instrument centuries earlier. According to Manser (2010: 29), the hammered dulcimer was first mentioned in Appenzell in 1567 in financial records. Sources from the seventeenth and eighteenth century indicate that the instrument was usually associated with low social status and itinerant musicians, whom the authorities regarded with suspicion (Gifford 2001: 68). Today, both the dulcimer playing and its teaching as well as the instrument making are part of the living cultural heritage in various regions[5], and innovative attempts have been made to further develop the instrument (Akakpo 2021: 96).

Dulcimer Players Who Signed Stenographic Notations

Jakob Alder **alias** *Widebach-Jock (1888–1956)*

Jakob Alder (1888–1956) was a member of the famous ensemble, *Urnäscher Streichmusik*, which he joined in 1910, left the following year for religious reasons, and played in again from 1922 onwards, taking on the leading roles as its most versatile musician until his death (Hürlemann 1984: 37). Well-versed in the use of different instruments, he mostly played the cello. As a dextrous music writer, he showed great ingenuity in composing. For this purpose, he used his shorthand notation, which was later adopted and further developed

Figure 2. Hammered dulcimer made by Johann Fuchs, Appenzell, 1990. Photograph in the private collection of and with permission of Brigitte Bachmann-Geiser (2014).

Figure 3. Jakob Alder (1888–1956), undated photograph, wearing a traditional costume (Hürlemann 1984: 37). The unconventionally designed pipe is part of the traditional attire.

by Jakob Alder (alias Alders Jock, see below), whom he trained (Roth 1987). Among his pupils was also the dulcimer player, Emil Zimmermann. The trade with musical instruments occupied him as much as agricultural pursuits and his activity as an insurance agent. Well acquainted with wind instruments, he also temporarily conducted the local village brass band (Hürlemann 1984: 37).

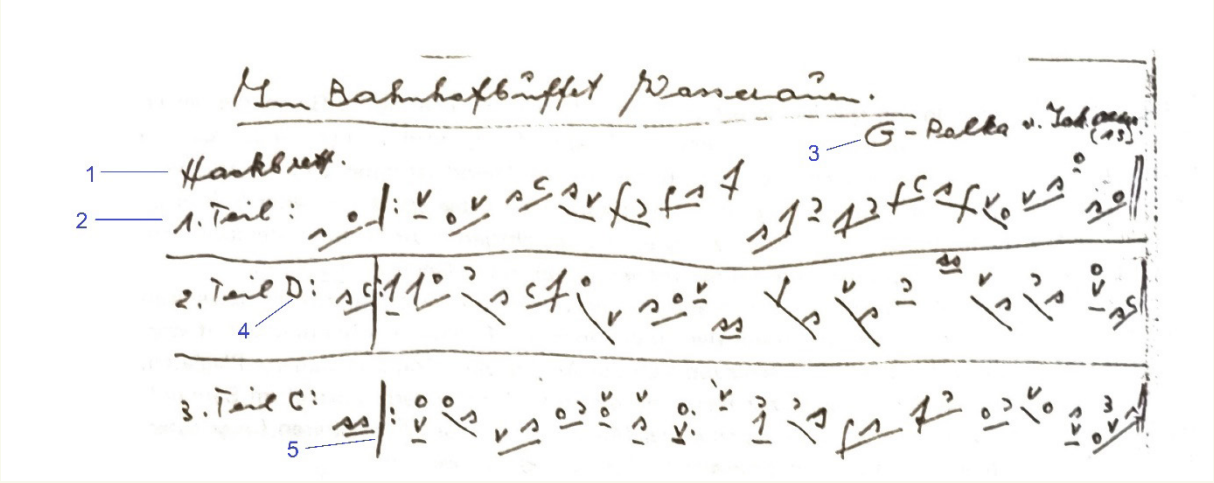
Jakob Alder **alias** *Alders Jock (1915–2004)*

When Jakob Alder was 20 years old he received, from his family, a dulcimer which had been built at the end of the nineteenth century. He played this instrument all his life: it was considered one of the best dulcimers of its time. Jakob Alder is considered the most virtuosic dulcimer player of his generation. In addition to the dulcimer, he also learned to play the viola, double bass, brass instruments, church organ and accordion, thus developing into a musician of rare versatility. He received theoretical training at brass-band conducting courses in St. Gallen. Alder played in many different ensembles and was also in great demand as a substitute musician.

In his portrait of the Alder family, Hürlemann (1984) mentions that Jakob Alder (1915–2004) used a personal writing system, adding that the notation cannot be translated and does not indicate the duration of notes, a claim that is probably not supported with enough sources or only anecdotal secondary references.

The stenographic notation techniques presented and discussed here are not specifically tailored for the hammered dulcimer and at least one stenographic notation is attributed to the violinist *Jakob Weiss* (1893–1956). According to dulcimer player Emanuel Krucker, who

Figure 4. Stenographic notation of the dulcimer part of the song, *Im Bahnhofbuffet Wasserauen* [‘In the Station Restaurant in Wasserauen’]. The notation corresponds to System 1 (see Table 1 below), presumably by Jakob Alder (1915–2004).



Legend:

1. ‘Hammered dulcimer’.
2. ‘1. Part’. Denotation of the parts help musicians to orient themselves in the piece.
3. Indication of the starting tonic (G).
4. Indication of a change of tonality (new tonic: D).
5. Conventional repetition bar.

researched various dulcimer tuning systems, the notation has no obvious benefit related to the mechanics of the instrument and could be used just as well for other instruments and for vocal music. The present examples nonetheless pertain to dulcimer music.

Reading the Stenographic Notation

To begin, an inventory of symbols is needed. For this, the example of a piece notated both in stenographic and conventional staff notation is helpful. Before matching the pitch and rhythmic symbols, Fig. 4 explains the surrounding symbols and peritext needed in order to understand them. The identical melody is transcribed in standard notation in Fig. 5, with the rows of the stenograph marked by colored frames: red for the first, green for the second and blue for the third row of the stenograph.

Additional diacritic signs are needed to notate the piece in Fig. 4 and the author of the stenograph adopted these from standard notation. They are the dot (‘.’) for a fifty percent elongation of a note and the number three (‘3’) for the triplet. In Fig. 5, the dot appears in the middle of the third row, the triplet at the very end.

Although most notations are monophonic, the stenograph can technically represent multipart notations. In the example of *Im Bahnhofbuffet Wasserauen* (Fig. 4), a few instances of two-part notation appear in the third row. This is done simply by vertically stacking the two symbols for the pitches.

Figure 5 shows the entire piece, *Im Bahnhofbuffet Wasserauen*, in staff notation. The excerpts that can be found in the stenographic notation are framed. In Fig. 6, both notation systems are depicted and the signs are aligned in order to make the comparison and translation between the two systems evident.

The long-time archivist of the Centre for Appenzell and Toggenburg Folk Music, Erwin Sager, wrote (pers. comm. 2021) that the manner of drawing the stenographic notations found in Fig. 4 recalls the writings of Jakob Alder (1915–2004) from Herisau. *Im Bahnhofbuffet Wasserauen* was composed by Alder (1915–2004) in 1955 for hammered dulcimer. The handwriting evidenced in Fig. 4 is consistent with

Figure 5. Transcription of *Im Bahnhofbuffet Wasserauen* from the collection of Margaret Engeler (Engeler 1984: 152). The coloured frames mark the parts represented in the stenographic notation in Fig. 4.

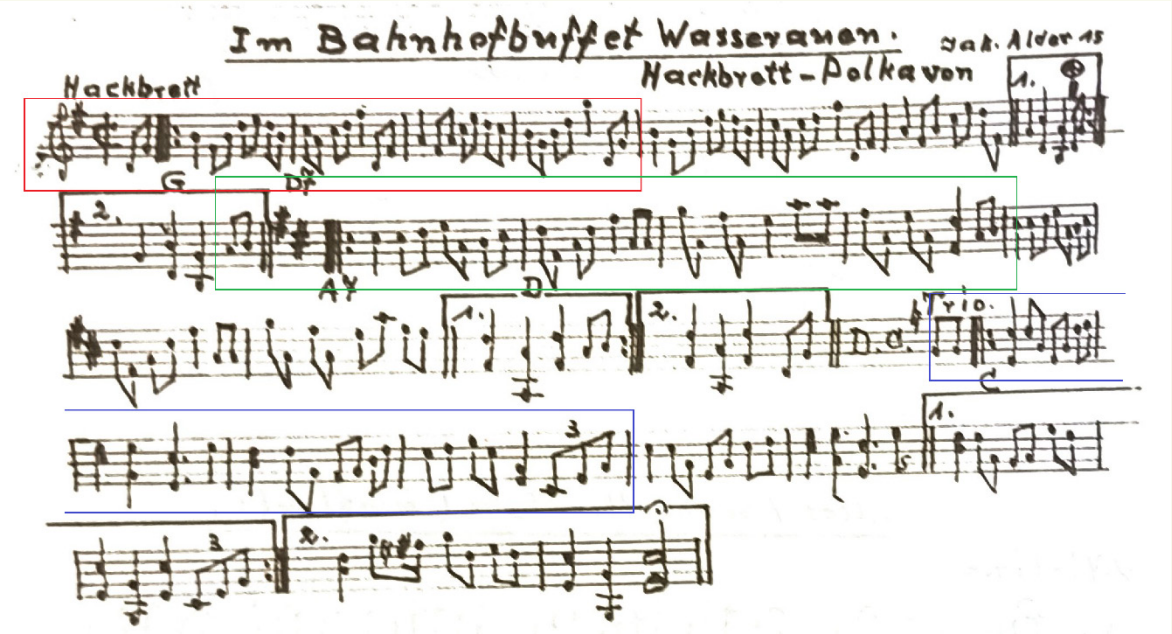
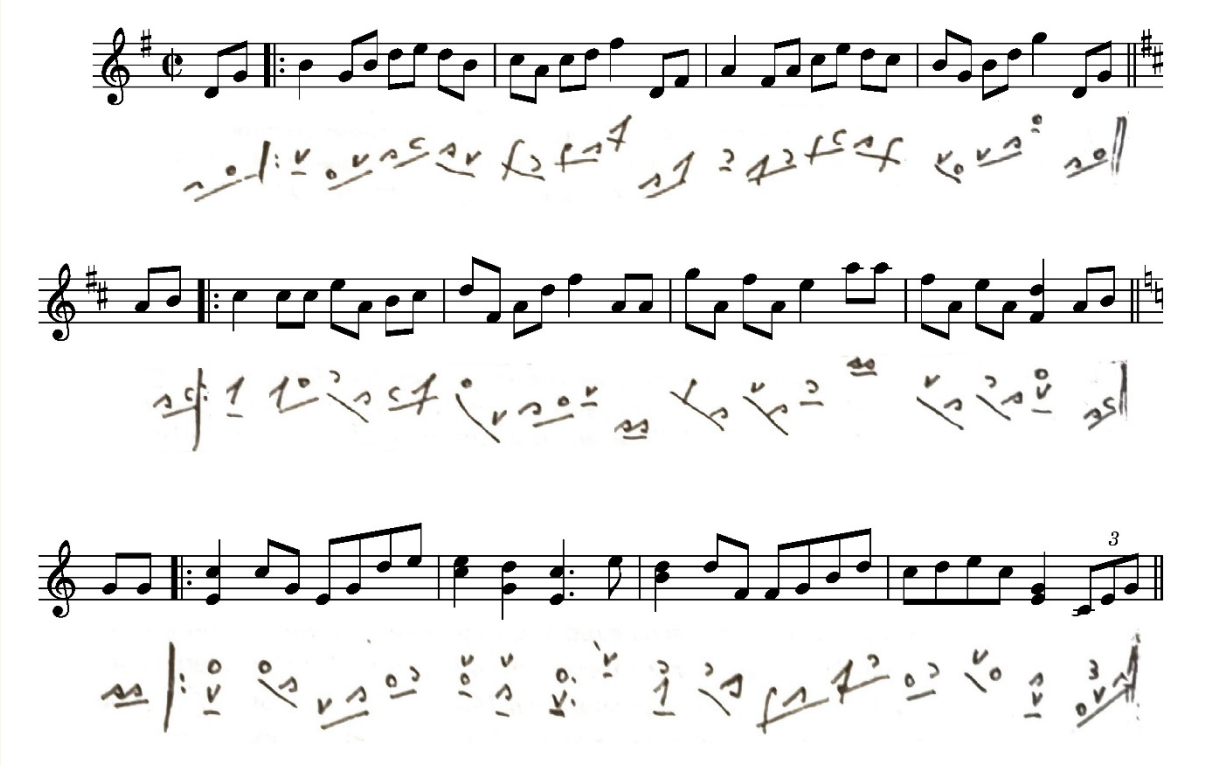


Figure 6. Compilation of the excerpts (framed in Fig. 5) from *Im Bahnhofbuffet Wasserauen* with staff notation and stenographic notation aligned for comparison.



the rest of his musical notations collected by Engeler, who visited Jakob Alder in the course of her research and was warmly received and provided with handwritten documents (Engeler 1988: 151–5). This correspondence between manuscripts clarifies the authorship of the stenographic notations shown in Fig. 4. The authorship of the stenographic notations shown in Figs. 1 and 7, however, remains speculative.

The stenographic notations discussed consistently make use of a moveable *do* sol-fa. To anchor the movable *do*, every stenographic notation, such as that shown in Fig. 4, identifies a tonic *do* by its musical letter name. All other notes of the stenographic notation are conceived (heard) as relative to this tonic. If the tonic changes, the transcriber indicates this with a Latin letter at the beginning of a row. The notation indicates relative pitch through the placement in the upper or lower part of a row and by the direction of the short lines up or down. The symbols themselves are the phonetic carriers of musical information. Table 1 demonstrates the symbols used in the transcriptions by the two authors, Jakob Alder (1888–1956, presumably System 1) and Jakob Alder (1915–2004, System 2)[6]. The main difference between the two is the designation of *Do* as a half or full circle, and correspondingly a different sign for *Sol*. We assume that the first system predates the second. Maybe the first one was found to cause mistakes between *Do* and *Sol* and therefore a new, distinct symbol was introduced.

The short lines below the symbols have two functions. The first is rhythm: a short line generally stands for a crotchet. This means that two symbols written above one diagonal line are two quavers, one symbol underlined represents a crotchet in conventional staff notation. The second information carried by the lines is pitch direction: a diagonal line under two symbols moving up designates an interval upwards and vice versa.

The duration of notes varies in the present transcriptions between semiquavers and semibreves. Short lines, horizontal and vertical, express all rhythmic values. For lack of concrete examples, it is not clear whether the three vertical lines denote a semibreve or a dotted minim. The assumption of a semibreve is more likely because the five rhythmical degrees are multiplicative (the preceding duration divided by two, reading from left to right) and there are otherwise no symbols for dotted notes. Dotted notes show up relatively rarely in Appenzell dulcimer music and will be notated with a dot added behind a pitch symbol.

The rhythmic division consists only of doublings (semiquaver, quaver, crotchet, minim, semibreve), which is quite reductionist compared to other proposed rhythmic notations such as Boenn's (2018) shorthand and Giger's 'rhythmoglyphs' (Giger & Küttner 1993). Chunking of information (the collapsing of multiple notes into one symbol), as Boenn (2018) suggests is done for rhythmic notation, does not occur. The vertical and horizontal orientations remain the same as in standard notation: vertical for pitch and horizontal for time. As Prévost (1833) in his treatise on a proposed stenographic method has shown, the relationship between the parameters could be inverted: Prévost uses lines as the denominator of rhythm, with the crossing of lines standing for note lengths (see Pierce (2016) for a step-by-step explanation of this notation). This reversal of parameters makes the method harder for musicians to access.

Figure 7 concerns another piece for hammered dulcimer that a player noted down on a napkin. With the help of the legend, the stenographic notation may be rendered in standard notation. In addition, the availability of a sound recording of the same piece, played on a hammered dulcimer contributes to an understanding of what musical information is recorded in the shorthand. The stenographs, as already mentioned, are, like all musical notations, significantly reduced representations of the sound.

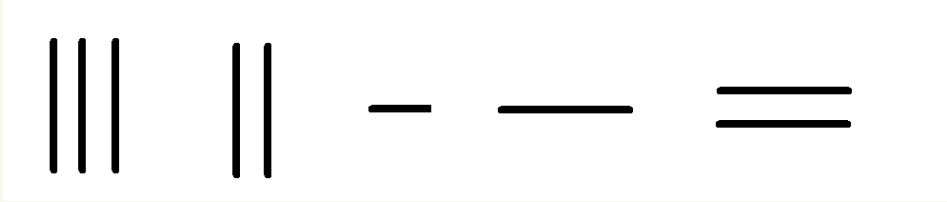
The name, 'A-Zäuerli', can be confusing because there are other melodies by the same name, one of them on a popular recording (Striichmusig Bänziger 2001)[7]. 'Zäuerli' is a local dialect word for yodel. Such yodel melodies were not exclusively vocal music but also played on string instruments, including dulcimer and brass instruments. The letter 'A' stands for the musical key, hence the transcription in the key of A in the absence of a key indicator in the stenograph. The naming of the key in the title helps to distinguish the piece from others called 'Zäuerli' in conversation.

The relations between a line and a pitch symbol are what Cohen & Katz (1979: 105) refer to as 'internal musical relationships' in music notation. These relationships explain complex information, such as 'the sizes of musical intervals with their directional movements, durations, and manners of performance' (Cohen and Katz 1979: 105). In the present case, the interval is contained in

Table 1. Translation of stenographic symbols to degrees of the scale, the tonic sol-fa syllables and the note names on a C-major scale.

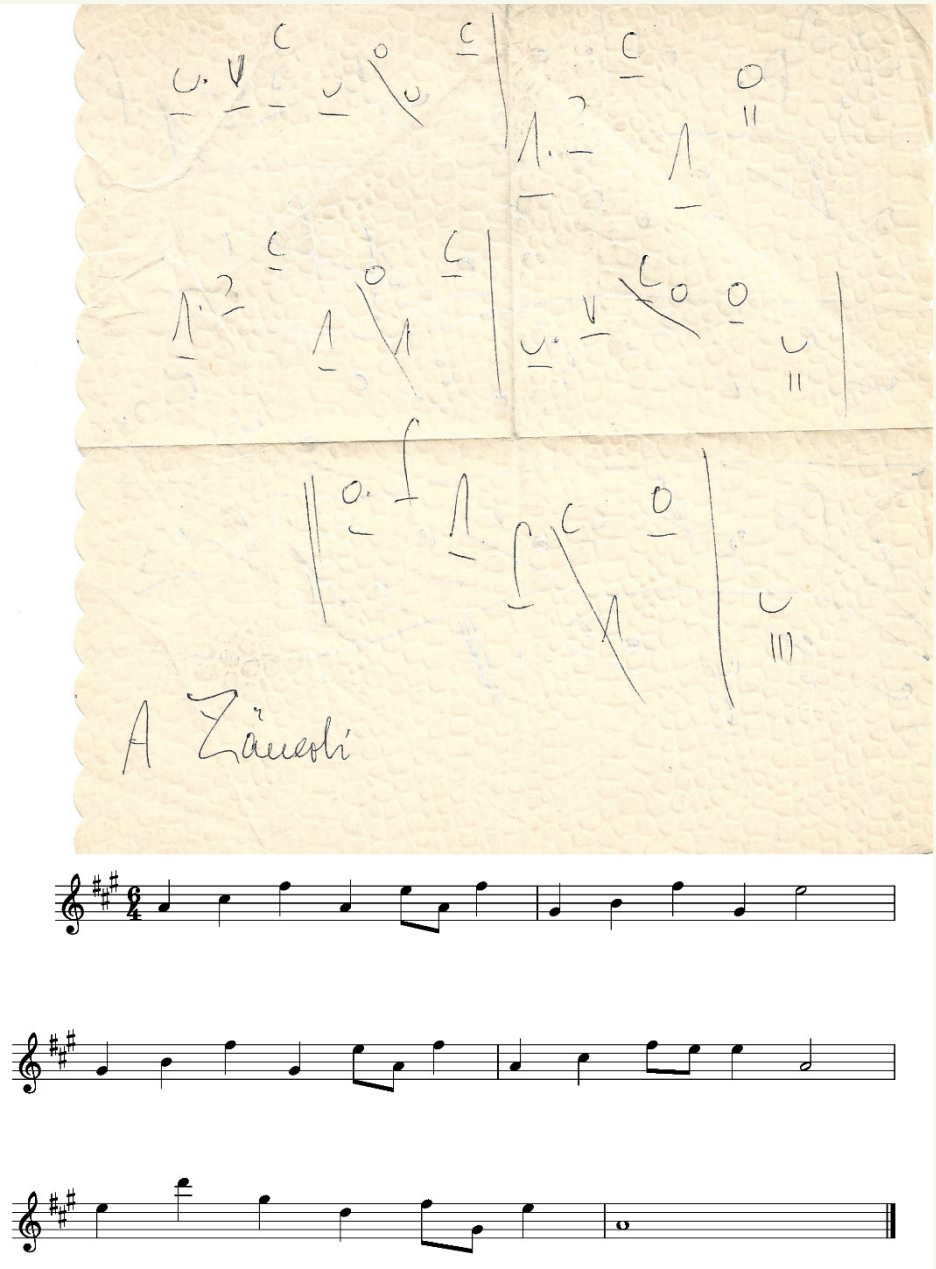
System 1							
System 2							
Degree	1	2	3	4	5	6	7
Sol-fa names	Do	Re	Mi	Fa	Sol	La	Ti
Diatonic name in C-Major	C	D	E	F	G	A	B

Table 2. Translation of lines for note durations to staff notation. The difference between crotchets and quavers is, in fact, the length of the line. In the case of quavers, the line underlines two notes. There is no distinct rhythmic symbol for a single quaver.

Stenograph					
Staff notation					
Beats	4	2	1	½	¼

the relationship between two pitch symbols. A full circle followed by a downwards arrow in System 1 (see Table 1), for example, stands for a third upwards or a sixth downwards. The directional movement of the interval is shown by the higher or lower placement of the following pitch symbol. This is necessary to decide whether the given interval is a third up or a sixth down. The placement is relative, the exact position on a vertical axis is irrelevant[8]. The duration is implied in the lines below the pitch symbols (see Table 2). What the writing fails to convey is the manner of performance. Since the transcribers play the same instrument and are familiar with its technique, phrasings and accentuations are likely to be stylistically apt when replaying is based on the notated information.

Figure 7. Top: Stenographic notation of a dulcimer piece and yodel melody, *A-Zäuerli*. Bottom: Transcription in standard notation. Staves correspond with rows in the stenograph.



There remains an ambiguity in the notation of rhythm: when taking into account the dots behind the first symbol of each measure, the beats do not add up. The following note, written as a crotchet, should presumably be read as a quaver if it follows a dotted crotchet.

Explanations for the Origin or Derivation of the Notation

Engeler has not, unfortunately, handed down any written information concerning the possible origin or derivation of the notation that forms the basis of her study. In an interview she conducted with Jakob Alder (1915–2004), of which an audio recording has survived (Engeler 1988), the subject of his shorthand is not addressed.

Erwin Sager (pers. comm. 2021) explained:

> The signwriting is based on the solmisation, which is centuries older. Thus, musical shorthand is based on an old technique. How it came to the Appenzell musicians is not known to me. I suspect that the hand signs of the solmisation of Curwen, which appeared in the nineteenth century, served as inspiration for the signs. e.g., the *do* as the Fist, represented by a ringlet.

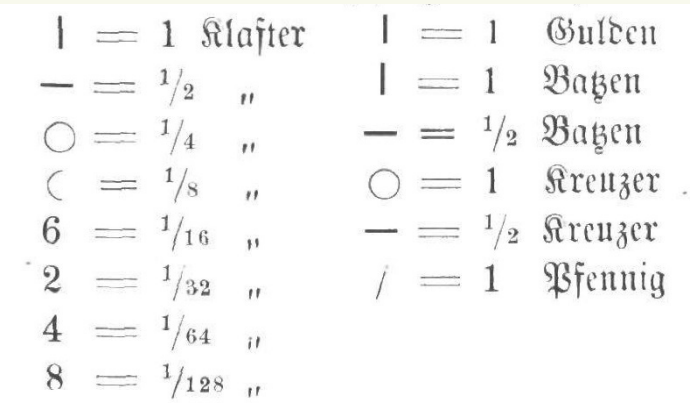
Teaching methods building on Curwen's solmisation were invented throughout the nineteenth century. The spread of the Sol-fa method (Curwen 1875) across the world by missionaries is well documented, as is their adaptation for other musical traditions (see Bethke (2019) for Sol-fa teaching in South Africa; Stevens (2022) for choral singing by missionaries in nineteenth-century India and Gong (2017) for Timothy and Mary Richard's introduction of the method in China). Jakob Alder's writing can be understood as another method derived from the Tonic Sol-fa system. It is plausible that the method was also introduced in music pedagogy for folk musicians. In this case, however, written sources do not suggest a significant impact of the Curwen method. For example, we lack advertisements for the Sol-fa method in newspapers that cover musical publications such as songbooks and teaching for four-part choir singing.

Another set of methods is numerical. The so-called 'tonic-numerical' method was promoted by John James Waite in England in the 1850s (James & Stevens 2019: 36). It uses numbers to indicate the position of notes in a particular key. The tonic is 1, the fifth 5, etc. Numbers always denote the degree of the scale, e.g. a 3 can be a major third or a minor third depending on the mode. The decision to use only degrees of the actual scale and not to specify intervals that are evident from the tonal context makes the notation more efficient. Chromatic notation can 'tax a reader's short-term memory' (Gaare 1997: 18) and requires more cognitive complexity compared to the Tonic Sol-fa system. Such a numeric notation was used in some examples in addition to the full and half circles and lines in the stenographs. In one case, a stenographic notation has numerical notation added to the stenographic symbols explained above. The example, which is also notated on a napkin, probably served as an explanation of the writing by adding the redundant numbering of the degrees. Some methods combine syllables and numbers. Recently brought to light again is O'Malley's numerical and syllabic method (James & Stevens 2019).

The influence of the Tonic Sol-fa sign language is a plausible explanation for the symbols used here, but there is a second, equally probable background: the 'old farmer's calculus' [alte Bauernrechnung], a system for calculating amounts of hay, wood and the size of agricultural areas. In 1895, this was described in detail in an article published in the yearbook of the charitable society of Appenzell (Meyer 1895). At the time this article was written, this writing system for calculation was already obsolete and was no longer used in hay markets. This notation is another example of a partial writing system: the farmer's calculus can denote prices, or measurements of lengths and areas. Meyer notates the symbols and gives their equivalents as fractions. The unit of measurement used as a reference was the so-called 'Klafter' (see Fig. 8), which historically denoted a length of six or seven feet. It was used for lengths, areas and even volumes (corresponding to approximately $3m^3$). The calculus symbols have in common with the stenographic notation the horizontal and vertical lines, as well as semicircles and full circles. The same symbols represented money, shown in Fig. 8 on the right-hand side. As in music stenographic rhythm, a horizontal line (= ½ Batzen) equals half the value of a vertical line (= 1 Batzen) [9]. The simplification accomplished by this writing is notable: relatively complicated fractions are replaced by a single symbol. The derivation from the farmer's calculus suggests that the notation system developed in an agricultural environment. String ensemble musicians, including dulcimer players, were either farmers in the nineteenth century or worked in the textile industry. The Appenzell Ausserrhoden region was one of the earliest industrialised areas in Switzerland.

Sager (pers. comm. 2021) offers a differing explanation. Jakob Alder (1888–1956) presumably based the pitch symbols on syllable names. For example, he used the ring for the *So*, perhaps in imitation of the letter 'O'. The sign for the fourth degree (*Fa*) resembles the letter 'f'[10]. It could well be that an (unknown) original inventor derived the symbols from the Sol-fa method or the demonstrated calculus, and players of a later generation, like Jakob Alder, associated them with vocal syllables. Since they do not contradict one another, each explanation may account for a part of the system. The rhythmic divisions with horizontal and vertical lines recall the calculation symbols. Regardless of the derivation, a central requirement is for the writing to work 'at the speed of sound' (Pierce's 2017): symbols have to be produced as quickly as possible. The abovementioned circles, lines etc. can all be executed with one stroke of a pen.

Figure 8. Farmer's calculus symbols for measurements (left-hand side, Meyer (1895: 28)) and money (Meyer 1895: 27)). Circles, half circles and short lines made their way into music stenography.



Related Mnemonic Strategies for Vocal Music of the Same Region

In a comprehensive study into individual strategies for memorising yodels, conducted in the years 2018 to 2021 (Ammann et al. 2021), a similar memory aid was found to be used by some yodellers, who write down syllables of the beginning of a yodelling tune. Since yodellers of this region can easily differentiate many similar yodel melodies, the question arose of whether they use special listening and memorisation strategies for this purpose. Because these syllables are associated roughly with pitch registers, for example, the vowel /u/ for high-pitched notes and /o/ for low pitch, the syllables help to recall a melody. Continuous rehearsal was identified as one of the most important strategies (rote learning) whereas writing down the first few yodel syllables (outsourcing of memory), or matching familiar songs with the same interval structures, was also an important mnemonic technique. Yodellers familiar with reading and writing music notation may think of interval structures or use notations for the external storage of their melodies. There is also the possibility of outsourcing the knowledge, e.g. by recording the melody with a mobile phone or by writing down the melody in a musical notation system. Music notation was found to play a subordinate role in the recalling of yodel melodies. The use of syllables as mnemonic devices by singers could, however, be a parallel strategy to the stenography of dulcimer players.

Function: Music Notation as Technology and Mnemonic Device

One way to approach the function of these writings is to consider the specific advantages of this notation. An obvious observation is its simplicity. There is no need for preprinted lines, all information about pitch is included in the symbols. The notation on a napkin is a good example of how situationally and spontaneously this technique was used. Maybe while hearing a dulcimer piece played in a tavern, the musician quickly notated the melody in order to take it home and later remember it.

The use of notation as a technology to outsource memory in real time is grounded in theories about the role of notation in musical traditions. Since its conception in medieval European music, music writing offered the possibility of storing knowledge about music externally. Music writing already served at that time as a 'body-independent extension of memory to external storage in written form and thus abstract from the situation' (Möller 2001: 19). The preservation of existing music thus no longer relied exclusively on one's own memory capacity. Instead of remembering the musical content, a 'know-how' (Ryle 1949: 27) of musical notation is required, which makes it possible to reread externally stored written data and to appropriate music that has been handed down in written form. Knowledge about melody, sound, order, production and other aspects of music can be stored externally, provided that the contents of these properties can be transcribed and read symbolically. As shown by the history of the introduction of musical writing into the previously orally transmitted musical traditions of the Alpine region (Wey 2019), the replacement of the oral tradition by the written one can, among other things, bring

about a formalisation or a standardisation of music. At the same time, the externalisation of memory creates a distance between the musical content and the musicians, which can be used for revivals or variations of the externalised content, but also for reinventions. The notation 'separates the musician from the music and opens up space for changing tradition in the distance gained' (Haug 1990: 43).

Music stored in writing can, under the right circumstances, leapfrog the memory of a generation in order to be studied and practised again by later generations. In the case of oral tradition, on the other hand, a hiatus between two generations can cause the loss of knowledge of any size and importance. A longstanding hypothesis formulated by Curt Sachs sees music notation as a crisis intervention when the oral tradition is under threat (Sachs 1974: 36). The function of music notation to spontaneously capture sound is more likely in the present case. It is rarely discussed today because transcription as a method of preserving music has been abrogated by audio recording: today's musicians immediately capture a tune on video or audio on their phones if they want to store the memory of a performance. Before hand-held recording devices emerged, fast writing down of the sounds was the most efficient tool for later recalling a melody. During the lifetime of the dulcimer players portrayed here, the phonograph and other recording devices already existed, but shorthand notation as a mnemonic device presumably remained valuable because phonographs were still expensive, difficult to transport and in short supply[11]. Compared with notation as a method for handing down music over generations, as described by Sachs, musical stenography acts as a very short-term memory aid. Moreover, it does not presuppose that it can be read by later recipients, but primarily serves the writers as an aid for their own memory.

Evaluation Based on Notation Theory Concepts

Stenographic music notation can be summarised as a mnemonic tool for the spontaneous capture of sound in the absence of recording devices. Assuming that one is familiar with the playing technique of an instrument, like the dulcimer, the rudimentary transcription of pitch and rhythm can be enough to later recall and recreate the sound of a performance. It highlights the importance of personal strategies of autodidacts for processing musical knowledge. As in text writing, stenography has become obsolete through ubiquitous hand-held recording devices. What bears discussion is the usefulness of this notation system and to what extent it meets its requirements. In the systematics of writing, musical notation counts as partial writing. Following DeFrancis' (1989: 5) definition, partial writing systems can be used to convey 'some thought', whereas full writing systems can convey 'any and all thought'. Partial writing systems attempt to graphically represent segments of a richer oral tradition (Barthel 1977: 27)[12]. Like any partial writing, the present writing system can only express certain parameters. The dulcimer stenographs presented can convey pitch and rhythm, but not timbre, musical expression or other aspects of the sounding performance.

A defining feature of any notation method is the unambiguous character of musical signs, which, according to Goodman, is the 'first semantic requirement' for a notational system (Goodman 1968: 144). This requirement is met by the symbols inscribed in Tables 1 and 2. The case of the rhythmic notation with dotted notes followed by an ambiguous crotchet or quaver presents an exception. Another requirement is efficiency, especially the speed of writing. Staff notation has been characterised as a system of signs which is maximally efficient in its use of minimal visual information to represent maximal musical information (Cohen & Katz 1979: 106)[13]. The trade-off for this efficiency of representation is a relatively laborious writing process. The addition of beams and flags for shorter notes takes time and must be carried out meticulously. Its chromatic notation allows us to notate all music regardless of tonality. As tonics change throughout a composition, the pitch remains absolute but this requires the addition of sharps and flats. A relative notation, as in the present stenographs, is easier to follow insofar as it only provides the signs necessary to represent the current tonality. The choice of either one is a consequential decision for the writer and both have advantages and difficulties. In the former, one uses the chromatic scale notation, including additional symbols for semitones, and writes everything in an absolute pitch system, independent of tuning and keys. In the second variant, the tonic is set as *Do*/C. For each key change, the tuning must be specified beforehand, but then only a small set of pitch symbols without alterations is needed. Both methods have been used in orchestral settings of the eighteenth to early twentieth centuries: while string instruments and woodwinds were typically written in a chromatic scale, overblowing brass instruments, especially trumpets and French horns, were printed in their situational tuning, e.g. instead of writing four sharps for E-major, writing 'trumpet in E' above the staff and then notating the melody in C without flats or sharps. The same principle applies in the present stenographs: the tonality of a part, often just an eight- or sixteen-measure phrase, is indicated at the beginning of a row. As we have seen, this information

remains optional. In a situation where one cannot know the tonality (imagine the musician sitting in a tavern and writing a tune on a napkin), the melody can still be captured accurately. The transcriber can later improvise on an instrument and find an optimal key in which to play the melody. This approach nonetheless requires a very fine ear: a musician has to hear a melodic progression with precision to note down the correct degrees of the scale. Familiarity with the idiomatic style of the Appenzell dulcimer music and its local tradition must have played a crucial role.

The information contained in such speedy handwriting is necessarily limited. To recreate a melody, much knowledge, both musical and cultural, is needed. In the case of a dulcimer piece, a person unfamiliar with Appenzell dulcimer music would not be able to guess how the performance sounded based only on the notation, even if the symbols were explained clearly.

With respect to the ethnomusicological division of notation into prescriptive and descriptive notation, the stenographic method lies somewhere in between. Prescriptive notations are made prior to music-as-performed (and serve as instructions for performers) while descriptive notations are made after the fact of performance (from recordings for the purpose of analysis) (Ellingson 1992: 161). Music stenographs, in contrast, are written while the music is playing. It functions, on the one hand, descriptively in relation to the sound heard in the moment and, on the other hand, prescriptively for the reconstruction of the music by the writer, using the notation as a memory aid. We can argue that the examples discussed represent a process-oriented form of music notation and thus challenge the paradigm of music notation as a product to which performance as a process is subordinate (Cook 2001: 4–5).

Conclusion: Stenographic Notation Methods and Musical Memory in Theory and Practice

In this article, I have presented the sources of a stenographic music notation practised by amateur musicians and translated their writing system. Schuiling (2019: 431) advocates for an 'ethnographic study of notational practices' in which history is integral to questioning assumptions about orality and literacy in musical traditions. The present study may offer a contribution to this proposition. As demonstrated, the notation can transcribe melody and rhythm unambiguously and without the help of a staff. The origin of the system remains speculative, with possible inspiration from various symbolic systems (Sol-fa method, calculus) in the musicians' cultural environment.

We know that while various systems of musical notation were invented from scratch in the nineteenth century, none of them were widely used. It is notable that the musicians mentioned here even developed their own notation instead of learning one of the many types of shorthand published in their time. This is worthy of its own discussion because the example may serve as a window into the disconnection of theory and practice in the field of music theory and education. In summarising various systems of stenography in treatises from nineteenth-century France, Pierce writes:

> [...] stenographers' preoccupations are curiously out of touch with the nitty-gritty aspects of composition. There are no discussions of revision, instrumentation, publication, or even performance needs. Stenographic treatises are not written in the first-person voice of a composer, but rather in that of an abstract, third person offering a service for composers' use. The disconnect between the treatises' claims to aid the needy composer and their schematic, highly idealized descriptions of compositional labor casts doubt on the stenographers' insight into the compositional process (Pierce 2017: 138).

Since these systems, conceived on the drawing board, were not known to composers, the composers were unaware of the concrete situation in which musicians find themselves when they spontaneously transcribe a melody. Often a grid, similar to staff lines, is a prerequisite. Notations, as Pierce (2017) maintains, are often creative and inspiring in their graphic appearance, but also ambiguous and not easily readable in their transcription.

An advantage of the stenographic notation system lies in its simplicity: the number of different characters is limited to a minimum. Alder's system works without staff lines but keeps the parameter of vertical placement for pitch, representing directional movement. The simplicity of the notation demonstrated here is explained by its origin in practice. It fulfilled the function of quickly recording music for dulcimer. This insight also sheds a different light on ideas surrounding oral and written transmission in musical traditions. The distinction between written and oral knowledge becomes blurred when such spontaneous notations are used in everyday life.

ENDNOTES

1. ‘While speech stenographers transcribed and published improvised poetic performances, stenographic transcriptions of musical performances have not survived; nor have I located sketches from composers who employed stenographic methods’ (Pierce 2017: 213).
2. Abraham & Hornbostel (1909: 6–8) proposed several signs that ethnomusicologists have used to this day, for example the + and – signs for the slight raising or lowering of pitch or the inverted fermata for the shortening of a note.
3. Pierce is referring to music stenography developed in the nineteenth century. A more recent, ethnomusicological application of stenography is the transcription system for drumming developed by ethnomusicologist Doris Green, Greenotation (Green 2014). It is based on Pitman’s stenographic method, a system of shorthand for the English language (Pitman 1845).
4. All translations of quotations by the present author.
5. Variants of hammered dulcimers exist in other regions of the Alpine area, especially around Salzburg in Austria (Deutsch 1986) and are organologically related to similar instruments in parts of Eastern Europe and Central Asia (Gifford 2001).
6. The assignment of stenographic System 1 and System 2 to the two respective Alders seems most probable, but it is not impossible that one of the two musicians mastered both systems and moved from one to the other over time.
7. This is a different tune under the same name, performed by a dulcimer and a violin.
8. This fact provokes the objection that the system does not distinguish between a second and a ninth. This is where the familiarity of the performers with the music comes into play: they would not mistake a second for a ninth in the melodic context of the following notes.
9. ‘Gulden’, ‘Batzen’, ‘Kreuzer’ and ‘Pfennig’ are names of different historical coins in the Appenzell region. As mentioned, by the time Meyer’s quoted article came out, this accounting system had already become obsolete and the coins references were no longer in use. Before the nationwide introduction in 1850 and dissemination of the Swiss franc throughout the 1850s, the states (‘Eidgenössische Orte’) had the right to mint their own currencies. The coins listed here were in use in the eastern part of Switzerland.
10. According to Barrett (1872: 496), John Austin used the same symbol albeit for different notes (Austin 1803). The system ‘is made up of the five most simple and distinguishable characters—ICrPe’ (Barrett 1872: 496).
11. Recording equipment remained elusive to the general public during the period discussed in this article.
12. Partial writing systems encompass a plethora of functions. Historically, they have been established for calculating and actuarial purposes. The earliest cuneiform texts are administrative and record transactions involving property, materials, and labour (Woods 2010: 17). Musical notations are partial writing systems that can express certain aspects of a composer’s thought. In the tradition of Western art music, the focus of notation is on the pitch and duration of sounds. Timbral features can be expressed with auxiliary symbols, such as vowels, and in a peritext, but the notation of timbre has not been developed in the same sense as the notation of pitch. Tablature systems, that exist in various musical traditions, express how to treat an instrument and are thereby less adaptive than a system that describes the resulting sound rather than the playing technique.
13. ‘Efficiency is one of the most important tests of a notation system. The less complicated the notation, the more efficient the system. Complication is measured by the number of visual signs needed to indicate different sizes in a given parameter. Efficiency can be measured by the number of sizes that can be notated by means of a number of visual signs’ (Cohen & Katz 1979: 105).

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Figure 7: Direct quote from Meyer (1895: 27).

ABSTRACT

Music stenography is a method for the simple and fast transcription of sound. Many systems have been developed, primarily during the nineteenth century, but did not find a practical application among musicians and composers. Examples of nineteenth-century music stenography, previously only documented in didactical treatises, were discovered during digitisation projects in the archive of the Centre for Appenzell and Toggenburg Folk Music in Switzerland. Some dulcimer players from the Alpine region of Appenzell mastered their own form of musical notation based on stenographic symbols. To decipher the code of pitch and rhythm symbols, I compare these to standard notations of the same pieces.

Music notation in an ethnomusicological sense is widely understood as a tool to outsource memory. The study of music stenographs contributes to our understanding of the relationship between oral and written traditions of music memory and the partition of musical information into graphemic representations and knowledge based on musicians' experience and practice. In this article, I analyse a sample of the idiomatic notations found among instrumentalists in the Swiss region of Appenzell in the context of transcription theories and concepts of music cognition. The details of musical information included in, and excluded from, music stenographs provide insight into the musical thinking of their transcribers and performers.

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Keywords. stenography, notation, transcription, alpine, Switzerland, dulcimer

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