Introduction to AAWM Music and Nature – Volume 1: On the analysis of yodeling traditions

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IN this first issue of *AAWM Music and Nature*, we present analytical studies of yodeling, focusing on aspects such as timbre, terminology, acoustics, and musical forms in various cultures. Yodel is a way of singing characterized by changes between chest voice and head voice, and a vocalization using syllables without lexical meanings. This technique is used in many kinds of music with manifestations specific to cultures, regions, and traditions, yet sharing sonic properties. In recent years since Plantenga's *Secret History of Yodeling Around the World* (2002), yodeling has gained traction in ethnomusicological research (Hahmann 2017, Ammann et al. 2019, Wey 2019), yet a comprehensive adaptation of analytical methods to this phenomenon remains. With the special issue on yodel, we aim to bring together expertise from ethnomusicological, music-theoretical, and analytical perspectives to complete the framework. We address among others the following questions: How does timbre morph during a performance? What distinct features of register-changing singing emerge in traditional polyphonic performances? How does the natural environment influence the propagation of the voice? The publication of this issue coincides with the formation of the Research Group on Analysis and Performance of Alpine Music, which aims to bring together scholars of Alpine traditions, herding music, yodeling, and other genres across mountainous and pastoral music cultures within the International Foundation for the Theory and Analysis of World Musics.

In this introduction, I provide an overview of analytical literature on yodeling, though with an emphasis on yodel of the Alpine region, the epicenter for yodeling in the public perception. Following, in the papers of this issue, we 'de-centralize' the approach with a focus on other regions, including Georgia, Sweden, Gabon, the Central African Republic, and the United States. Three papers follow an emic approach in that the authors write on music they themselves perform or are members of a community where a particular style of yodeling is prevalent. It is notable that most of the literature cited here is written in various other languages and only a small minority in English. This may have prevented a cross-border exchange of research results in the past. In this respect, one contribution of this Special Issue is to bring together the state of research in different languages (mainly German, Swedish, Georgian, and French) and, building on this, to present new analytical results from analytical considerations.

The 'around the world' view (Plantenga's title) of yodeling suggests some kind of common ground to study these singing practices in different cultures, yet this issue represents the first volume dedicated to the analysis of this distinct kind of vocal music spanning several world regions. An obvious consideration regarding the title of this issue is that it subsumes various musics under a term that originated in – and is often limited to – the German-speaking Alpine region. "Yodeling" is an umbrella term; in every region where such a singing technique exists, it goes under a different name. Even in the Alps, 'yodel, or

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the German word 'Jodel, encompasses many local traditions such as the Bernese 'Jutz', the Central Swiss 'Juiz', the Appenzell 'Zäuerli' and 'Rugguusseli', the 'Dudler' in and around Vienna, and the 'Johlar' in Vorarlberg (Fink-Mennel 2007), among several others. Such designations are meaningful because they describe yodeling styles that differ in their musical features.[1] Recently, a machine learning-based classification of regional yodel stylistics based on musical features (Wey and Metzig 2021) has identified regional characteristics and the discrepancies among them.

The first key feature of yodeling, in its umbrella sense, is a change of voice registers, from chest voice to head voice and back. However, not all designated yodels make use of this technique. The second feature is the absence of words, sometimes described as 'meaningless' syllables. This is an easy-to-understand description, yet not completely satisfying, because sound may well transport meaning in the absence of words from a dictionary. In search of a more objective term, "sense-neutral" syllables or simply "singing without words" could be alternatives. A further common trait of multi-part yodeling songs is the combination of a yodeling voice and other voices which do not alternate between voice registers.

Yodeling practices fulfill a large variety of music-social functions (see Shuster/Wey in this issue), ranging from hunting and hunting-related rituals (Fürniss 2006) to herding or signaling (Tiderman-Österberg 2020) and other forms of communication (Fink-Mennel 2007, 93), as well as protection from natural disasters (Haid 2008, 62), and therapy[2]. In all the traditions mentioned here, yodeling today also serves as musical entertainment and performers may sing only for the joy of singing itself in the format of an artistic performance for an audience.

The syllables are sung in frequent alternation between chest voice and head voice. This change of register produces throat beats that are made audible in different ways, depending on the aesthetics of the regional vocal tradition. The singing technique can be found on all continents in manifold forms characterized by vocal formations, languages, and dialects. The employed syllables are not arbitrary: Despite the absence of explicit rules on vocalization, the choice of syllables depends on the regional aesthetics. The chosen syllables show patterns of changes between voice registers (chest voice and head voice), small or large intervals, and pitch in general.

The description of these syllables is not so simple, because the term "meaningless" is inadequate for many. Proposals from the Alpine region, where I conducted my research, are 'non-lexical syllables', 'sense-neutral syllables', or a reference to 'singing without words' (Wey 2019). As further shown by Lomsadze (2021, in this issue), in Georgia another solution was found with the term *samgherisi,* derived from *simghera* (song), to 'denote all asemantic vocalizations' in a song (Mzhavanaze 2018, 296). Vowels provide the main sonic

1. Although sometimes described as a 'national' tradition (e.g., 'Swiss yodel', 'Austrian yodel'), those yodeling practices are not homogeneous within national borders, and variances inside the countries mentioned are probably larger than those between them.
2. As of 2021, there are several providers of yodeling for therapeutic purposes, e.g. in Germany (https://www.healingvoice.de/inhalte-der-kurse/#c153, 11.05.2021) or Switzerland (https://www.stimmbalance.ch/jodeln.html, 11.05.2021).

quality of syllables. According to research from different geographic regions, the selection of vowels is neither strictly regulated nor arbitrary (Fink-Mennel 2007, Fürniss 1992, Ammann et al. 2021). So far, we can describe, but not explain, the relation between pitch ranges and vowel choice. Take the example of the use of the vowel /u/ and /i/ for high notes in Northeastern Switzerland: Performers interviewed by [anonymous] (2021) say that these vowels are simply easier to sing and 'sound better' at the respective pitches. Two professional singers consulted on this idea, however, stated that the opposite is true: Vowels such as /u/ and /i/ are especially difficult to sing in the high register.[3]

Previous analytical studies of yodeling

Early comparative musicologists (e.g., Hornbostel 1925) assumed a diffusion of yodeling across the world from a single starting point. Similarly, they hypothesized that an instrument would be invented in one place and then would migrate across the globe (Stockmann 1971). This was largely supplanted by the newer, more plausible case for a polygenetic explanation—the independent invention of instruments and vocal techniques by many different cultures (Stock 2006, 81). For example, it may be assumed that wherever bamboo grows, humans at some point will build flutes from it. The 'migration hypothesis', then proposed by Hornbostel and many others, drew links among cultures around the globe that included yodeling voices in their music.

Although popularly associated with mountainous regions, yodeling also appears in many other contexts. Grauer (2006, 17), referring to the *cantometrics* classification (Lomax 1976), subsumes yodeling under 'interlocking' and names "African Pygmies and Bushmen, [...] Bantu tribes", as well as "the Dani people of New Guinea, the Ainu of Japan, the Jivaro and Campa of South America", "the Hupa tribe of California, some yodeling cattle herders in Switzerland, and a group of Italian stevedores singing in 'Tralalero' style".

In focusing on the relations among different yodeling musics, it is important to point out that there are numerous ways to interpret any similarities. On one hand, shared sonic properties and even evolutionary connections between cultural developments and the emergence of the singing technique can suggest the presence of musical universals.[4] On the other hand, in light of the polygenetic hypothesis and the ethnographic literature, we can argue against these implications by pointing to different social functions and underlying structures of various yodeling traditions. Perceived commonalities may also be constructed through the process of transcription or through the lens of Western music analysis, which has tended to focus on pitch and meter and to neglect timbre (see the contribution by Shuster and Wey in the present volume). One can point to a common feature in various musics and propose that such a feature has a common cause or musical function. For example, we may observe the voice register change in yodeling across cultures and conclude that since they all employ this feature,[5] there is a connection, be it

3. Based on a phone interview (2020) and e-mail request. The contradiction hints at the explored, but not yet fully understood, differences between a 'professionally trained' voice and ways of learning yodeling.
4. Nikolsky (2020, 25) argues: "Formation of each new Indo-European language seems to have followed the adoption of husbandry. The yodeling areas correspond to the earlier stages in expansion of the Indo-European languages, conserved by the mountain systems [...]."
5. Even though, as mentioned before, voice register changes are not necessarily present in all cases.

historical or in their origins. Or we can refer to the very diverse functions of yodeling and the ecological environments and rest with the assumption that the sonic features are similar expressions of unrelated histories and origins. Presenting a collection of papers on yodeling in different cultures, we of course aim to foster musical exchanges and comparative sharing of knowledge. However, this does not necessarily imply an overarching explanation for functions, musical meaning, and even the musical structure of yodeling practices. The fact that certain vocal musics sound similar to our ears (and produce similar results from our tools of analysis) does not in itself establish a historical relationship.

Alpine yodel first became a subject of detailed musical analysis in the dissertation of the German musicologist Wolfgang Sichardt (1939). In his study on 'the origin of yodel', under a nowadays obsolete methodology ('Kulturkreislehre'), Sichardt aimed at describing five different 'layers' of yodel from different historical epochs which were supposed to be classifiable based on tonal and metric properties. Although the methodical premise of his study can be rejected,[6] Sichardt was the first to describe non-normative tonalities and meters in yodel, at that time still a novel approach for traditional music inside Europe. In one of the earlier studies after Sichardt's, Walter Graf (1965) analyzed the timbre in the yodel voice, discovering the phenomenon of the (almost) absent fundamental frequency. Ethnomusicologist Hugo Zemp (1987) produced a short film on tonality in Muotatal yodel, in which he described ekmelic intervals (i.e., intervals outside the diatonic scale and in non-equal temperament), some assumed to be derived from the overtone series. Zemp used the (now obsolete) *StroboConn* technology to determine the pitch. Following considerations by Sichardt and Zemp, Hermann Evelyn Fink-Mennel (2007) published her book on the analysis of the harmonic, melodic, and rhythmic structure of yodel in the Bregenzerwald region (Vorarlberg/Austria). An analysis of melody, form, and text of early yodel songs was undertaken by Eugen Hänggi (2011) as part of his Ph.D. thesis (at the St. Petersburg Conservatory, in Russian). His collections of yodel songs notated from 1805 to 1826 constitute the first account of such songs in Switzerland. At a time when songs with wordless, syllable-based refrains were already popular in Tyrol, the composer Ferdinand Fürchtegott Huber initiated a similar genre ('Jodellied'), incorporating folk tunes from the region of Bern as well as alphorn melodies into his choral works (Kammermann et al. 2016).

The recent interest in yodeling comes as the scholarly discourse moves toward transdisciplinary research, i.e., "integration of academic researchers from different disciplines with non-academic participants in co-creating new knowledge and theory to achieve a common goal" (OECD 2020). Research that includes practitioners and community members is represented in various forms in the analysis of music and has great potential for developing new, meaningful analytical tools for music which, for example, is not pitch- and rhythm-centered. Transdisciplinary research may also benefit the study of music more broadly. Timothy Wise's statement in the introduction to *Yodeling and*

6. The method, part of the so-called "Kulturkreislehre" (the German term is used in the English literature), was based on the adaptation of strata models from archaeology and geology for cultural studies. Analogously, sound recordings from field research, for example, were subdivided into different ancient layers, from modern times back to antiquity. The layers of different ages, which we can make visible in the ground by excavation, are, however, an illusion in relation to – often orally transmitted – songs. While handed down to the next generation, music is constantly changing, and very different stylistic expressions can arise in parallel.

Meaning in American Music illustrates the problem: "…the frequent reaction I get when I tell people about my research subject: aside from actual yodelers and specialists in musicology, ethnomusicology, and related subjects, people typically respond with smiles, smirks, even belly laughs, but almost always with some degree of incredulity […]. Many people just cannot take yodeling seriously" (Wise 2016, 3). Wise's account shows that certain forms of music are still perceived as more serious and worthy of scientific study, and others less so. By incorporating transdisciplinary methods, such biases are reduced, and the needs and questions of the Yodel community are directly brought into the research process. Noteworthy is that a large project funded by the *Swiss National Science Foundation* from 2015 to 2018 also received support from the organization of yodel clubs, the *Federal Yodeling Association EJV*, enabling a vibrant exchange between yodelers and researchers and their mutual interests (Ammann et al. 2019).

In 2016, Sandra Hupfauf published an in-depth study of the cultural transfer between Central Europe and the United States, focusing on the famous Rainer family who toured North America from 1839 to 1842 and performed, among other songs, yodels. There, the singers not only celebrated enormous successes but left lasting influences on the development of musical popular culture (Hupfauf 2016). However, such an intercontinental cultural transfer in relation to yodeling forms a rare case historically. Very recently, the field of music perception has taken an interest in yodel with a study of how singing evokes emotions, which can motivate people to join groups that yodel together regularly (Kammermann 2021).

Other than musicologists, yodeling, due to its distinct sonic properties, has also attracted researchers from phonetic and phoniatric disciplines (e.g., Frank and Sparber 1972; Geneid et al 2016). Recent studies have measured the fast pitch transition time between voice registers (Echternach and Richter 2010), identified amplitudes in outdoor kulning performance (Eklund et al. 2019), and made phoniatric comparisons between yodelers and classically trained singers (Suh and Choi 2000, Echternach et al. 2011), to name just a few.

THE PRESENT ISSUE

The four papers in the present special issue add further perspectives. These are not all new to experts on the musical traditions, but they focus on specific musical topics within these traditions. The papers allow readers to explore not only diverse expressions of 'yodeling' but also a variety of scholarly discourses.

In their interdisciplinary collaboration, ethnomusicologist Jennie Tiderman-Österberg and physicist Isak Stomberg study the aerial transmission of Nordic kulning. Herding calls, such as kulning, are meant to reach receivers across long distances outdoors. The sound depends on many factors of the outdoor setting, including the landscape and airscape, the latter of which refers to wind, temperature, and humidity. Kulning can be either sung or performed on wooden horns, but in both cases the singer or player interacts with the environment—thus the title of the paper, **"Duets with nature: How natural acoustics affect the experience of performing Nordic herding music in outdoor settings"**.

Acoustic considerations turn out to be intertwined with the emotional response of the caller and the receivers of *kulning*. Since the aim of herding tunes is to reach distant locations, knowledge of what affects the sound propagation outdoors and how this affects the one who calls is important to the understanding of music in nature. This led to the purposes of the study: to describe what factors influence the natural acoustics, what effects they produce, and what role echoes and reverberations play in experiences of singing kulning and playing horns. The authors traveled to eight summer farms (*fäbodar*) in Sweden together with five kulning singers and two cow horn musicians. They measured and described data concerning landscape, soundscape, and airscape, and asked the musicians to try their vocal and instrumental sounds in different frequencies and timbres. Combining their answers with the environmental data, the analysis shows what affected the sound propagation and how this was experienced by the musicians as a form of emotional sensation.

Susanne Fürniss' study **"Diyei and yeli: Yodeling in two musical cultures of Central Africa"**, traces the career of the author since 1987 and essentially gathers research already published but scattered in articles mostly in the French language. New work has been accomplished on the Baka in Cameroon, who, like the Aka, also yodel and have musically similar variation forms. Earlier work on the phonetics of Aka and Baka yodel led to 'compositional' questions on the Baka material, such as what constitutes the relationship between a yodeled and a non-yodeled part. The Baka repertoire, which was originally sung during a divination ceremony before big hunting campaigns, includes yodeling as an independent ritual, with which the women weave protection around the men. *Dìyèí*, an onomatopoetic word, is determined by the yodel technique, i.e., the alternation of head voice and chest voice.

Bringing together the various traditions of yodel can inspire their analytical comparison. For the paper, **"Mapping vowel color and morphology: A cross-cultural analysis of vocal timbres in four yodeling traditions"**, Lawrence Shuster and I assembled four short samples from four regions and studied their timbres in detail. Timbre, the often neglected 'uncharted territory' in musical analysis, is a key component in yodel. The cross-cultural examination includes yodeling from Austria, Cameroon, Gabon, and the U.S.A., and approaches timbre through two representations, vowel space and spectral morphology. Results show how various unrelated practices of yodeling rely on timbral features of interlocking low harmonics and a division of vowel space between physical voice registers (head voice, chest voice). Under close inspection, vowel spaces and timbral morphologies are revealed to be highly heterogeneous among the four samples studied. Culturally based spectral expressions that were observed contrast with earlier studies that had focused on commonalities such as a rough division between grave and acute vowels.

Teona Lomsadze's paper **"Krimanchuli: A yodeling phenomenon in Georgian traditional polyphonic music"** teases apart the musical terminology and the function within a polyphonic framework for the *krimanchuli* voice, a register-changing style specific to certain regions within Georgia. *Krimanchuli* refers to a high-pitched top voice in Georgian traditional polyphonic singing, performed by a specific technique and creating a very distinct acoustical effect. Various scholars have described it in their own terms, which

has caused misunderstandings in the past. Drawing from a body of literature in the Georgian language, the paper condenses the various concepts of *krimanchuli* into a model of yodel voice in the context of a polyphonic setting. Singers employ short formulas—brief sequences of notes that can be repeated, varied, and transposed—to create a semi-improvised melody. Once established, these yodeling phrases become fixed parts of the song. Contemporary performers spoke in interviews about their practices and with one exception stated that they perform yodel just as memorized, even though it may sound improvised to the unfamiliar listener. The reliance on fixed motivic formulas relates to the research by Ammann et al. (2021) in Northwestern Switzerland, which shows that the memorization of melodies without words is facilitated by the repetition and variation of formulas. To tease apart the complexity of yodel techniques in Georgian polyphonic song, the paper compares their uses in the same underlying song. The technique of *gamkhivani* is also considered, which has not yet received the attention of the international audience and turns out to distinguish itself from *krimanchuli* through its formulas and the tessitura. A specific timbre, unlike that of krimanchuli, has ostinato-based formulas with a smaller range. The singers of Georgian polyphonic songs, the *mokrimanchuleebi*, elaborate on the questions of how they (re-)create *krimanchuli* voices and whether performance is impacted by the crossover and modernization that is very lively in Georgian traditional music (Lomsadze 2019).

In this **introduction**, I have highlighted previous work and possible ways to approach yodeling through the means of musical analysis. The contributors to this volume again offer several perspectives on the functions and various musical aspects. The contributions in this volume will hopefully set a standard for the analytical musical examination of different yodel styles in the years to come and, beyond that, inspire a plurilingual exchange among performers and researchers of various academic traditions and disciplines.

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