

# Tradition as a Spatiotemporal Process – The Case of Swedish Folk Music

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## Abstract

Space and time both play a major role in the evolution of traditions. While it is known that processes at different scales guide the evolution of culture, it is not yet clear which structural factors promote the emergence and persistence of traditions. This paper argues that the principle of least effort is among the factors that foster traditions, but the principle needs to be accompanied by other local processes. The theoretical discussion is supplemented by an agent-based simulation, which illustrates some of these factors and allows to study their interaction.

*Keywords:* tradition; spatio-temporal process; agent-based simulation; folk music; Sweden; principle of least effort

## 1 Introduction

Tradition in music is based on a simple principle: musicians pass on their tunes to new generations, who pick up the tunes by listening and mimicking. This process often leads to a continuity of the repertoire and style of how to play the tunes, often even without the involved people being fully aware of the process. However, tradition does not adhere rigidly to past patterns but evolves naturally, often in chaotic ways. Despite the importance of continuity, tradition can only emerge if musicians compose new tunes and adapt old ones. Without any evolution, tradition would not exist. Folk music and folk dance accordingly evolve and take up current trends from society. For instance, the practice of Swedish folk dance has moved towards gender-neutrality in the last decades (Kaminsky, 2011), which is a general trend in society but seemingly also in folk music.

Already in 1910, one of Sweden’s foremost artists, Anders Zorn, showed large interest in traditional culture. He arranged a competition (called *Riksspelmansstämma*) with the aim of collecting different regional styles in Swedish folk music (Ternhag, 2010; Eriksson, 2017). Tradition has though not only been of interest from an artistic point of view (Boström et al., 2010; Ternhag, 2010; Eriksson, 2017) but also from a scientific one (Eriksson, 2017; McDonald, 1997, 1996). In particular, research aims at understanding the nature of tradition and of how individuals contribute to the process of tradition (McDonald, 1997).

The process of tradition is complex and its numerous facets are hard to capture in their entirety. Accordingly, different concepts of tradition (McDonald, 1997, 1996) and of tradition in the context of folk music have emerged (Lundberg, 2010). It is broadly accepted among researchers from different fields as well as among practitioners that tradition can be seen as “the decision to engage in a certain sort of emotional relationship [...] involving a network of people, a shared musical activity and repertoire.” (McDonald, 1996). In particular, the *continuity*, which allows for a shared repertoire, the participation of *individuals*, and the *social activity* connecting these individuals are often regarded as being central. We will, in the scope of this article, refer to this definition. Lissa (1970) thus acknowledges

that “[w]ithout tradition there can be no historical *continuity*, because it is tradition which forms a link between the individual stages of this continuity. However, a general *theory of tradition* is not yet available.”

The process of tradition happens at different scales. The individual musician being part of a tradition clearly has an impact on these musicians who he or she is in contact with. At the same time society can, as in the introductory example of the trend towards gender-neutrality, influence different traditions at a large scale. In this aspect, tradition is very similar to many other geographical processes, which also involve different scales (Haggett et al., 1965).

Considering the different scales involved, it could suggest itself that large-scale processes dominate and local traditions accordingly disappear, which is, however, not the case. Caldwell and Eve (2014) have discussed circumstances under which local traditions can persist longer despite of coexisting large-scale processes. Inglehart and Baker (2000) and Fjellvang (2011) have, in contrast, discussed the global perspective of tradition. There exists though little to no literature about these aspects in respect to folk music, which is different to many other traditions. We thus raise the following question:

### **Which major principles guide the emergence and persistence of tradition as a geographical process?**

This article aims at tackling this question from the perspective of geographical information science while knowingly not providing a thorough answer, neither from the perspectives of social sciences, musicology, ethnology, etc. In particular, we first provide examples of coexisting processes at different scales, which shape the evolution of tradition (Section 2). Thereafter, factors that guide the emergence and persistence of tradition are discussed. Some of these factors create a temporal delay in the dissemination of the tunes, while others foster the emergence of local traditions (Section 3). In order to understand in how far these factors and the corresponding principles relate and influence each other, they are incorporated into an agent-based simulation (Section 4). Finally, the results of the simulation are critically discussed by setting them into the context of qualitative observations about the process of tradition (Section 5).

## 2 Small and Large-Scale Processes Involved in Tradition

Tradition is the result of coexisting processes at different scales. It seems to be impossible to list all processes that have an impact on the emergence and persistence of local traditions. This section is hence dedicated to several examples that illustrate different kind of such processes.

**Societal influences on local tradition.** The living conditions strongly influence our traditions. Simple, rural life in the 17th and 18th century changed during the industrial revolution. Instead of the kitchen at home, which served in many cases as a “minimalist dance floor” – people had to dance on the spot (*fläckpolska*) – people went to community centres (*bygdegård*), which allowed for progressing counter-clockwise around the dance floor due to the floor’s larger size (*rundpolska*). The current urban environment offers virtually endless possibilities of entertainment, low-cost travelling and communication – the way people meet at festivals (*stämma*) and pass on their tunes, often supported by recording equipment to support the memory, has changed considerably.

**Spatial propagation of dance types and musical themes.** While local traditions exist all over Europe, dance types such as polska, the type of dance which is currently the most prominent dance type in Swedish folk music, propagated throughout many of these local traditions, from Poland to Germany and France, to Denmark, Sweden, and Norway. European folk music is, in fact, strongly interconnected (Ling, 1997). Such connections are, however, not limited to dance types, but also musical themes and fragments have found their way through Europe. For instance, the musical theme “La Folia” can be found in many international sources (Jersild and Ramsten, 2008). Among the numerous other examples is a tune, which is often referred to as “Polonäs Nr. 56 efter Anders Larsson ifrån Sexdrega, Västergötland” (Figure 1). This tune, a variant of a polska (*slängpolska*), has found to be played in tradition and written down in variants at many places in Europe, among them different places in Sweden, in Latvia, in Slovakia, and in Germany.

**Local tradition as a self-preserving process.** Despite large-scale processes, local tradition has never disappeared. For example, numerous examples of a certain type of polska (sixteenth-note polska) with very distinct characteristics have been collected and written by August Fredin in Gotland, Sweden. In fact, polskas are more usual in some parts of Sweden than in other ones (Moberg, 1950; Klein, 1937). There are many examples of different styles of interpretation as well. For instance, semiquavers are in certain parts of the region Västergötland, Sweden, played with a special bowing technique, called *fallstråk*. Also the names for identifying the same type of dance are chosen in very different ways in different local traditions (Gustafsson, 2016).

Small and large-scale processes complement each other to what we regard as being tradition. There are though far more processes involved than the ones described here – they are only listed to illustrate which kind of processes contribute to tradition. In the next section, we will discuss the factors that guide these processes conceptually.

## 3 Conceptualization

Tradition is shaped by individuals despite being the result of a social process. Individuals have very differing motivations for the way they participate in this process – different people like, e. g., different tunes and some musicians are more active than most others in organizing festivals. In addition, the overall number of people involved in the process is rather small compared to many other examples of social networks. It seems thus reasonable to conceptualize the process as a social network rather than by some continuous structure, an approach that is not unusual in geography (Haggett and Chorley, 1969) and geographical information science (Mocnik and Frank, 2015; Mocnik, 2015).

**Global dissemination of tunes.** There are different factors that lead to a global dissemination of tunes among musicians and in space. The most important one seems to be that musicians meet, e. g., at festivals and play tunes together. They share tunes from their repertoire by letting other people mimic their tunes. Such mimicking often leads to new versions of a tune because musicians adapt tunes according to their preferences or to their local tradition, and misunderstandings can arise. Most important, musicians can only play tunes that they have either invented on their own or that they have learned from other musicians. In addition, one might assume that musicians only play the tunes they like, because most folk musicians are non-professional. Accordingly, one can expect that these tunes that people know (because they had the chance to learn them at some occasion) and like disseminate most quickly. This conforms with the experience of many musicians: there are some “hits”, which are played or at least known by a critical mass of musicians, making them ideal for being frequently played and being disseminated.

**Local traditions.** In contrast to the factors that lead to a global dissemination, there are a number of factors that support local traditions. Communication costs are among the most decisive factors. The chance that two musicians get in contact, e. g., by participating in the same festival, decreases when their places of residence are more distant. In contrast, musicians that live in the same vicinity usually know each other and share their tunes. This factor has been very important – travelling was more costly in former times. It is often referred to as the *principle of least effort* (Zipf, 1947). This principle does, however, not stop the global dissemination but rather adds a temporal retardation.

Another factor is the familiarity one gains to a certain repertoire or to a way of interpretation. Many musicians find friends and meet them on a regular basis, build communities, and thus share a common repertoire. In many cases, a group of musicians even find their own style after a while. This effect is, in contrast to the principle of least effort, temporally enduring: it does not only add a temporal retardation to the dissemination but can also lead to an enduring local repertoire.

In addition to these factors, tunes are never perfectly mimicked. Many musicians rather aim at playing the tunes they like in the way they like, they simply adapt the tunes to their needs. At the same time, there is a difference between the intention of the transmitter and the received message by the receiver, which is unavoidable (Gabrielsson and Juslin, 1996; Gabrielsson, 1985). Accordingly, tunes change when they are passed on by many musicians over time and possibly over long distances. These factors together, in particular the last one, give rise to Tobler’s first law of geography (Tobler, 1970): local traditions come into existence and persist.

**Polonäs Nr. 56 after Anders Larsson, Sexdrega, Västergötland (Sweden)***En note bok* (Anders Larsson), p. 15 (nr. 56)**written down after Anna Szirmay-Keczer (Slovakia)***Die Sammlung von Tänzen und Liedern* (Anna Szirmay-Keczer), p. 60 (D-86)**Serra, efter Nicolaus Bresch, Riga (Latvia)***Notbok från Riga* (Nicolaus Bresch, rewritten by Nils Denker)**Polska, after Åkerlind, written down by Anders Gustaf Andersson, Nora, Mörkö (Sweden)***Olof Anderssons uppteckningar 1936* (Olof Andersson), nr. 654**Polonoise, after J. H. Dahlhoff, Soest, Westfalen (Germany)***Tanzsammlung Dahlhoff* (J. H. Dahlhoff), nr. II 125

Figure 1: Different variants of a tune that is spread and actively played in different parts of Europe. Only some of the variants are exemplarily listed.

**Tunes in conceptual space.** Music is not “one-dimensional”. When referring to conceptual spaces (Gärdenfors, 2000), one can identify different dimensions of a tune. Each tune comprises a melodic form (Gustafsson, 2016). The melody is composed of tones with a certain pitch, which are played in a given rhythm. Thereby, rhythmic shifts can occur (Ahlbäck, 1995; Johansson, 2009, 2015), as well as quarter tones and different intonations (Westman, 1998; Omholt, 2015), and decorations and ornaments, e. g., trills. In fact, each tune has its own character, which is reflected by the type of dance and the feeling when playing the tune. Each of these aspects can be thought to relate to a dimension of a conceptual space.

Many dimensions of the conceptual space can hardly be formalized in sheet music but are rather communicated by the process of mimicking. Even large collections of tunes, such as the tune collection of the so called *Folkmusikkommissionen*<sup>1</sup>, is only able to represent some of these dimensions. This is despite the character of a tune being composed by all of these dimensions.

**Coexisting processes.** The processes discussed above often incorporate more than one dimension but they are not necessarily incorporating all of them. The dissemination of tunes by sheet music collections cannot fully convey the feeling of the tune, and tunes mimicked at a festival might have a tendency to lead to minor deviations. The processes often emphasize different dimensions of the conceptual space. Despite their coexistence, they might be rather independent, or they can mutually constrain each other. The understanding of the coexistence seems to be rather complicated but needed for a holistic understanding of tradition in the context of folk music.

## 4 Agent-Based Simulation

In this section, we introduce rules for an agent-based simulation<sup>2</sup> for practically examining the mutual influences of the discussed coexisting processes. While formal representations – sheet music collections – exist, they would only offer the possibility to study certain dimensions of the tunes and of tradition. We rather aim here at making sense of the principles behind tradition for tracing its nature.

The simulation consists of musicians, which know tunes and play some of them actively. Furthermore, the musicians organize festivals and meet in person, which allows them for mimicking other musicians’ tunes. In particular, we make the following formal commitments:

- C1a** Musicians invent new tunes.
- C1b** Musicians have very differing creativity.
- C2a** Musicians learn tunes by mimicking at a festival.
- C2b** Some musicians organize festivals for musicians in their vicinity.
- C3a** Musicians can only play tunes that they know.
- C3b** Musicians only know the tunes they have invented, or that they have learned.
- C4a** Musicians only play tunes that they like.
- C4b** Musicians only play some tunes at each festival.
- C5** Musicians often like tunes similar to the ones they like.

The results of the simulation are discussed in the next section.

## 5 Discussion of the Results

We have discussed different large-scale and local processes in Section 3. In this section, we relate the agent-based simulation to these processes.

**C1** describes the creation process, which ensures the existence of tunes. Figure 3 shows that musicians actually improve their repertoire due to **C2**. Hereby, only musicians in the same vicinity mutually share their tunes, due to **C2b–C3b** (Figure 2). As musicians only share the tunes they like (due to **C4**), tunes do not automatically disseminate at each festival. However, without **C5**, a tune does usually constantly disseminate, despite the temporal retardation. When incorporating **C5**, the dissemination seems to be opposed by an effect that seeks for local similarity, as is illustrated in the bottom row in Figure 3.

The simulation allows to get a basic understanding of the factors that create tradition. There are, however, several limitations. The model does, so far, only represent a tune as a string and computes similarity as the Levenshtein distance (Levenshtein, 1966). While such approaches are widely used (Casey and Slaney, 2006), they only refer to sheet music. Many dimensions of the conceptual space are, however, ignored, and a genuine comparison of tunes is rather complicated (Gustafsson, 2016). In addition, it would make sense to model similar processes that refer to different dimensions in order to examine in how far these interact. The approach of our simulation does so far not incorporate all available knowledge from other disciplines, e. g., from social sciences, which will allow for future improvements.

## 6 Conclusion

The nature of traditions is complex. It is the result of several opposing and coexisting processes, which happen at a large scale as well as on a local scale. While much is known about traditions from the perspective of social sciences, musicology, ethnology, and other fields, it has, to our knowledge, never been explored from the formal perspective of geographical information science. This is surprising as tradition is a prototypical example of the dissemination of information in geographical space and time. This article discusses some of the involved processes while ignoring many other ones. A more detailed understanding of how the different processes interact is though needed. In particular, one may ask which circumstances create an equilibrium between large-scale and local effects. The examination of such interactions, both theoretically and by a suitable model, together with a comparison to empirical data from tune collections might be a suitable means for such considerations. The conditions change under which tradition emerges and persists – society undergoes transformations, communication becomes less costly, and we are strongly aware of our traditions. The aforementioned research might provide answers on how such changing conditions structurally impact local traditions.

<sup>1</sup><http://fmk.musikverket.se>

<sup>2</sup>For code see <http://www.mocnik-science.net/#mocnik2018e>

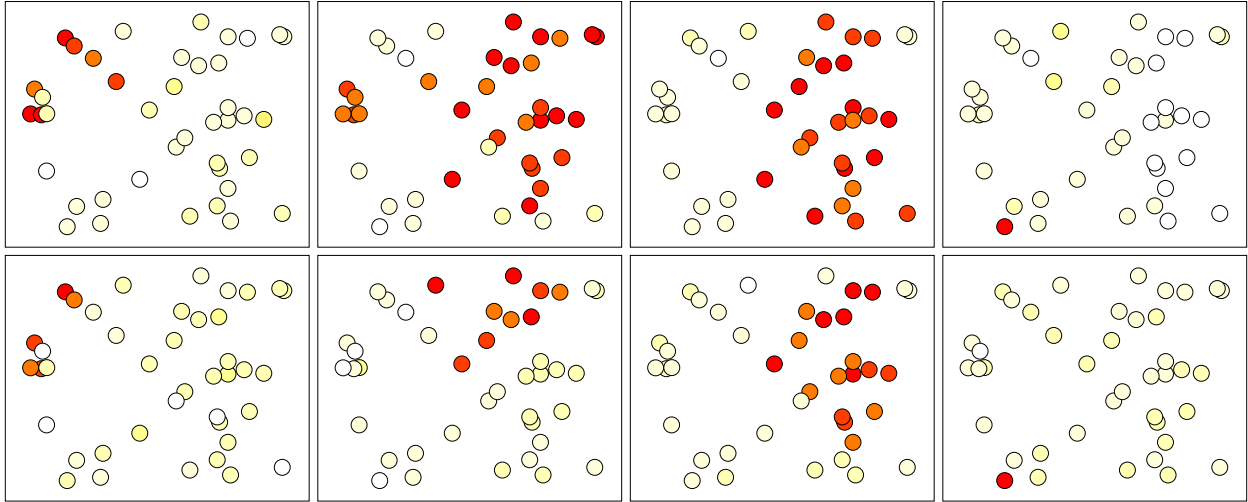


Figure 2: Dissemination of a tune after 100 iteration steps. The top row displays four different tunes having been disseminated using **C1–C4**. The bottom row displays the same tunes but additionally assumes **C5**. Musicians who know the particular tune are displayed in red; a variation of the tune, in orange; dissimilar tunes only, in yellow; and very dissimilar tunes only, in white.

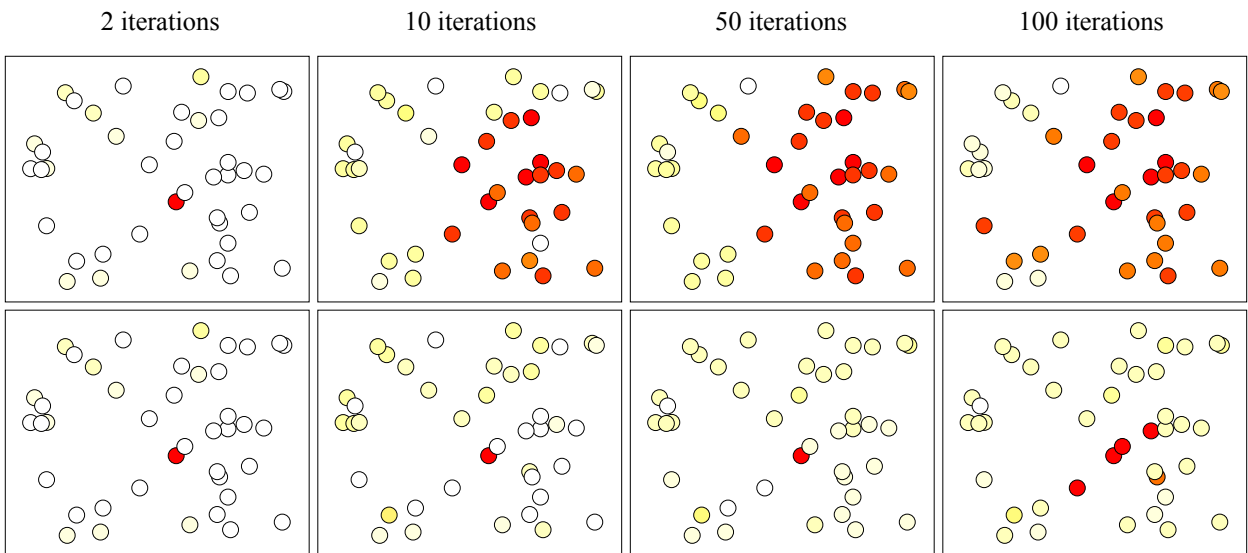


Figure 3: Dissemination of a tune over time (for a different number of iterations). The top row refers to **C1–C4**, while the bottom row additionally assumes **C5**. The use of colours is identical to Figure 2.

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