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Exploring Gender in Classical Music Through Coded Weaving

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Project Introduction & Concept

This thesis explores the concept and creation of my art piece entitled *Mozart -Symphony No. 1*. By first exploring the history of using fiber and textiles as a method of encoding and archiving information and then comparing this to the historical gender dynamics of classical music compared to textile arts, I will demonstrate how the act of encoding classical composition into woven tapestry demonstrates textiles' ability to be both fine art and a powerful tool.

Weaving and other fiber arts have had a storied history of being used to archive and encode information, often acting as a physical manifestation of language. One of the most well-known historical examples of this concept is the Incan quipu. This method of writing developed by the Andean indigenous group is comprised of a horizontal chord of fiber from which multiple other chords are hung. These hanging chords are knotted in patterns of knot clusters that, when read lying flat, reveal a written message. These fibers were made up of dyed cotton and occasionally dyed wool. Often quipus were carried by messengers to deliver information over long distances. The tradition of quipu provides a clear example of fiber work acting as a physical manifestation of language.[1]

Another example of an encoded textile in history is the Jacquard Loom. Invented in 19th-century France by Joseph Marie Jacquard, the Jacquard loom was a large-scale loom that could replicate woven patterns by using a series of punch cards. These punch

[1] Ascher, Marcia, and Robert Ascher. "The quipu as a visible language." Visible language 9, no. 4 (1975).

cards operated the loom by using the holes in the card to indicate which warp (vertical) threads would be lifted as a human operator passed the weft (horizontal) threads through. This process of lifting and passing could create intricate textile patterns across many yards of fabric. It is suggested that the Jacquard loom would act as the inspiration for the use of binary code in computing. These punch card outputs are another example of textiles as a visual language.[2]

The contemporary fine art world has also embraced the practice of encoded textiles. This can be seen in the work of artist Gwendolyn Zierdt. More specifically, her 1997 piece entitled *The Unabomber Manifesto*. This work is a large-scale, hanging wall tapestry, comprised of a boxy, abstract pattern (See Fig. 1). While this pattern is meaningless at first glance, it is a translation of the first four paragraphs of the Unabomber Manifesto, converted first into binary code and then digitally translated into a visual pattern. Despite the use of technology, the final tapestry is handwoven. In the original text in which Ted Kaczynski, “The Unabomber”, writes about the effect of technological advancement on society. Zierdt uses this source material and contrasts it with her medium of choice as an ironic commentary on the digitization of handicrafts like weaving in the contemporary world. This point is further explored in her use of both digital and physical tools.[3]

Early into my first experiences of weaving, I noted the similarities between operating an analog floor loom and my adolescent experiences as a musician. The shape of a floor

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[2] Heath, F. G. “ORIGINS OF THE BINARY CODE.” *Scientific American* 227, no. 2 (1972): 76–83. http://www.jstor.org/stable/24927408.
[3] Bachmann, Ingrid. "Material and the promise of the immaterial." (2000), pg. 27

loom as well as the use of pedals and string tension in its operation, are reminiscent of playing a piano. At first, these connections were tentative and surface-level, however, further research solidified the connection between music and weaving. The Jacquard loom was one of the first widely used machines that operated on a binary system. However, a later predecessor to binary code is the player piano. This full-size floor piano operates on a system similar to the Jacquard loom in which a scroll of paper with punched holes is fed through the instrument. The holes in the Jacquard loom indicated which warp threads would be lifted, whereas the holes in these scrolls indicated which piano keys should be pressed.[4] These observations of similarity between weaving and music are also cross-cultural. In a 2012 study about the T'boli people of the Phillippines, researchers concluded that the foundations of T'boli weaving practices paralleled their musical composition, with both practices using the same fundamental principles of creation and similar vocabulary.[5]

This connection between weaving and music becomes even more important when examining the gender dynamics between the two art forms. Before the mid-twentieth century, a harsh division between fine art and craft caused textile-based works to be relegated to the category of "women's work". Much of this had to do with the extended history of fiber and textile work being functional works primarily produced in the home.

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[4] Heath, F. G. "ORIGINS OF THE BINARY CODE." *Scientific American* 227, no. 2 (1972): 76–83. http://www.jstor.org/stable/24927408.
[5] Manolete Mora. "Tune and Textile: Interrelatedness in the Music and Weaving Arts of the T'boli, Philippines." Humanities Diliman 9, no. 2 (2012): 1–31.

This classification often undermined the skill and artistry of textile and fiber work, delegitimizing it as an art form.[6] Opposite to the history of textile art, the history of classical music is also highly gendered. Historically, orchestral, and symphonic composition has been highly male-dominated. Additionally, it has been highly idolized, often being considered one of the highest forms of art. This elevation of classical composition often manifests itself in the idea of the musical prodigy. This idea centers on a young, typically male, genius composer and musician whose innate talent in the medium is seen as a “gift” bestowed upon them. The most notorious example of this is the case of Wolfgang Amadeus Mozart, who wrote his first symphony at the age of eight.[7]

In the Fall term of 2022, I enrolled in a weaving course through the PSU art department. It was through this course that I was introduced to the concepts of code and gender in relation to weaving. These themes would go on to become the center of my artistic practice. As my final project for this course, I developed a method of translating sheet music into weaving using Zierdt’s work as my primary inspiration. The resulting weaving was a translation of "The Swan" by Camille Saint-Saëns for flute (See Fig. 2).

During the creation of this first tapestry, I had not yet considered the project’s connection to gender. For my final thesis artwork, I aimed to fully overlap these themes of gender and code. The final work is a large-scale tapestry weaving, made from cotton

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[6] Auther, Elissa. "Fiber art and the hierarchy of art and craft, 1960–80." *The Journal of Modern Craft* 1, no. 1 (2008): 13-33, pg. 17.
[7] Kivy, Peter. Possessor and the possessed: Handel, Mozart, Beethoven, and the idea of musical genius. New Haven: Yale University Press, 2011, pg. 78-96

and wool threads. This weave is a partial translation of the first violin line from Mozart's "Symphony No. 1". The selection of this piece is meant to draw upon the previously mentioned archetype of the male prodigy in classical music. The translation method was largely the same as that used in "The Swan", however, I expanded upon it to make the translation more thorough and faithful to the source material. The details of the translation method will be further explored in the next section.

Explanation of the Translation Method

The pitch of a note is indicated using the color and placement of the thread. The loom was programmed with a nine-pedal pattern. This tapestry uses a cotton warp and a wool weft. When each pedal is pressed down it lifts the designated warp threads. When a weft thread is placed underneath the lifted thread, it leaves some portions of the weft exposed. This creates a pattern of exposed warp (vertical threads) and weft (horizontal threads) that is slightly different depending on which pedal has been pressed. Every note in the key signature was assigned to each pedal. This results in each note leaving a slightly different pattern on the final weave (See Fig. 3). Rests and silences in the music are indicated using a thin white thread in a plain weave. Plain weave is the most basic weave pattern in which every other warp thread is lifted. The final weave uses three colors: dark green, mid-tone green, and yellow. These colors indicate which octave a note falls into, with the dark green thread being the lowest octave and the yellow thread being the highest. For example, if one were to weave a "D" on the staff followed by a "D" below the staff, the same pedal would be pressed both times, but the

first would be strung with a mid-tone green and the second with a darker green (See Fig. 4).

The duration of each note is indicated by how many times the weft string passes over the warp. In the final weaving, each pass over the warp was equivalent to half a beat. For example, two passes over the warp would indicate a quarter note. After each note was placed into the weaving, a thin white thread would be threaded in between each note to act as a spacing between each note. For notes shorter than half a beat, a colored thread would be strung across a portion of the warp, with the rest of that line being filled in by a note spacing thread. For example, a sixteenth note would be strung across exactly half of the warp before being filled in with a spacer. This spacing thread allows the viewer to determine the beginning and end of each note and differentiate notes from one another. The end of each measure is indicated by two passes of a thick white yarn. This acts as an indicator of time signature. One could count the number of threads between each measure indicator to determine how many beats fit into each measure (See Fig. 5). Once all these elements have been combined and applied to a piece of music, an abstract woven pattern begins to form (See Fig. 6).

Opportunities for Further Exploration & Conclusion

While the translation of this thesis work is more thorough than its original iteration, there is still room to further explore encoding music in textiles. For example, this project

doesn’t integrate tempo, articulations, or dynamics into the translation key. Introducing these may allow for future encoded weaves to be entirely faithful to the source material. On a conceptual level, this process of deconstructing work from male-dominated fields using a historically female-dominated medium has the potential for many more iterations. These iterations could be explored through different categories of textile art or different source materials.

To encode a work through weaving involves breaking it into its most essential parts. This lowers it from the status of a piece of "godly" genius. It strips back those layers of mythology. To take these works of purported genius and deconstruct them into their most basic visual components brings into question why we value these works so highly. Is it prodigy or posterity? This also works in reverse: in the same way that a purportedly complex work can be made simple, a weaving can hold the incredibly difficult. This presents the audience with whether this is a denigration of classical music or an ode to textiles' ability to be both fine art and a powerful tool.

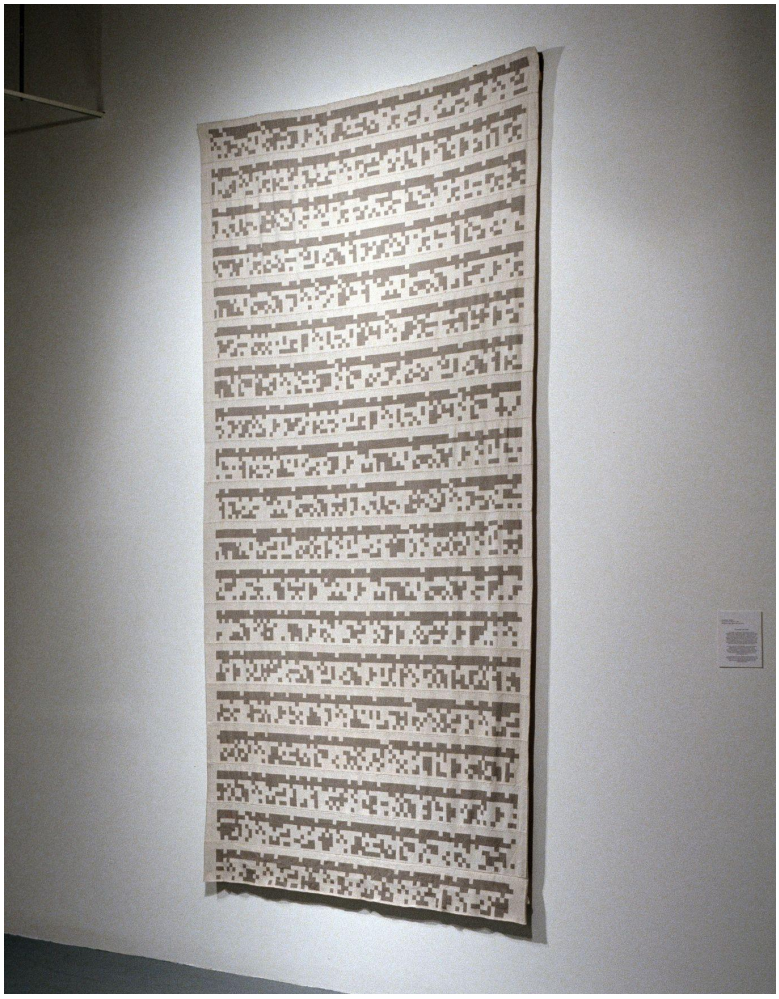

Figure 1. Gwendolyn Zierdt Muzzy *The Unabomber Manifesto*,
1997, Handwoven fabric, silk and mercerized cotton yarns. *https://gwenzierdt.org/textiles/88pmesjjnu2xpm4s5ujjpepfaytimq*

Figure 2. Laura Helgeson, *The Swan*, 2022,
Handwoven fabric cotton and bamboo yarns.

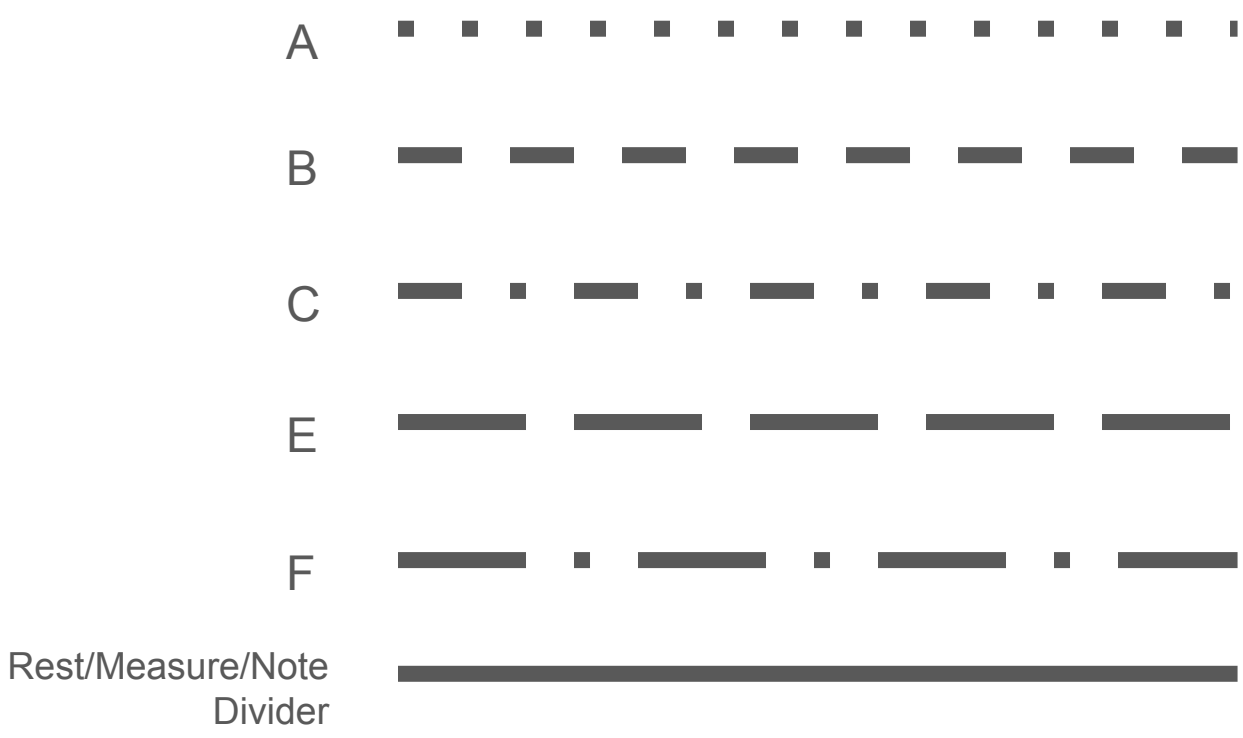

Figure 3. Shows a theoretical distinction between notes using pattern.

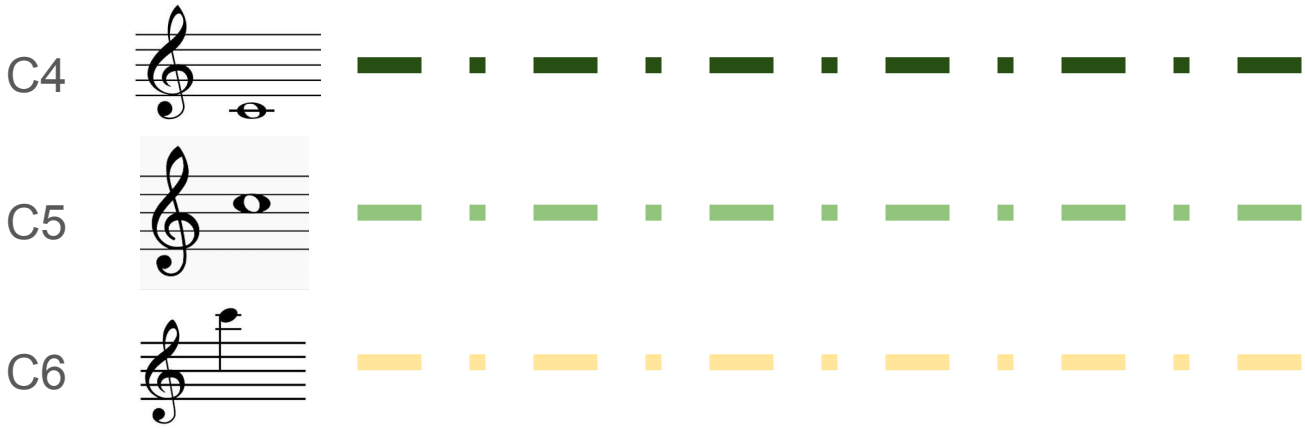

Figure 4. Exemplifies how thread color is used to differentiate pitch on a weave.

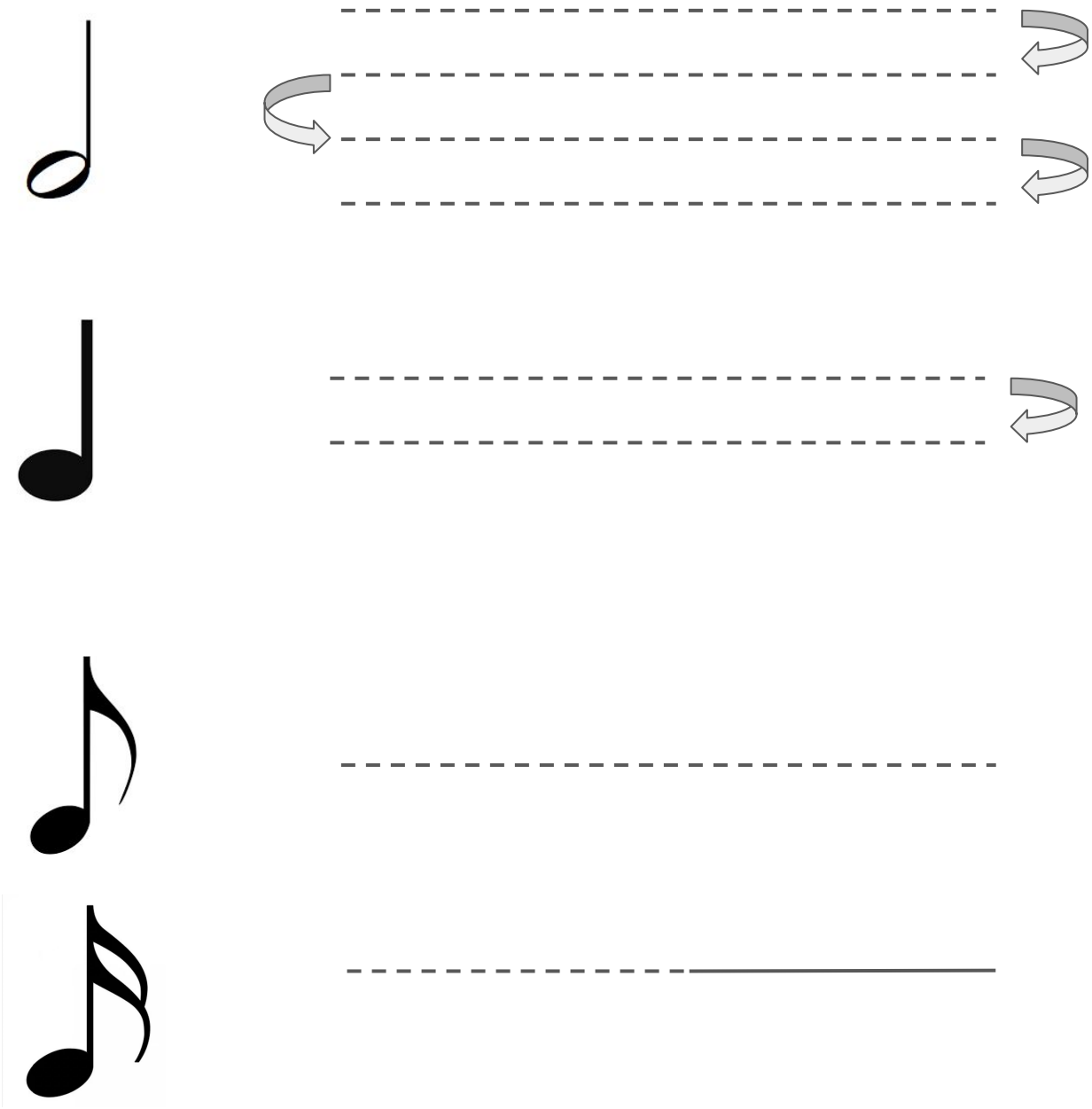

Figure 5. Shows how note duration is patterned based on how many times the weft crosses the warp.

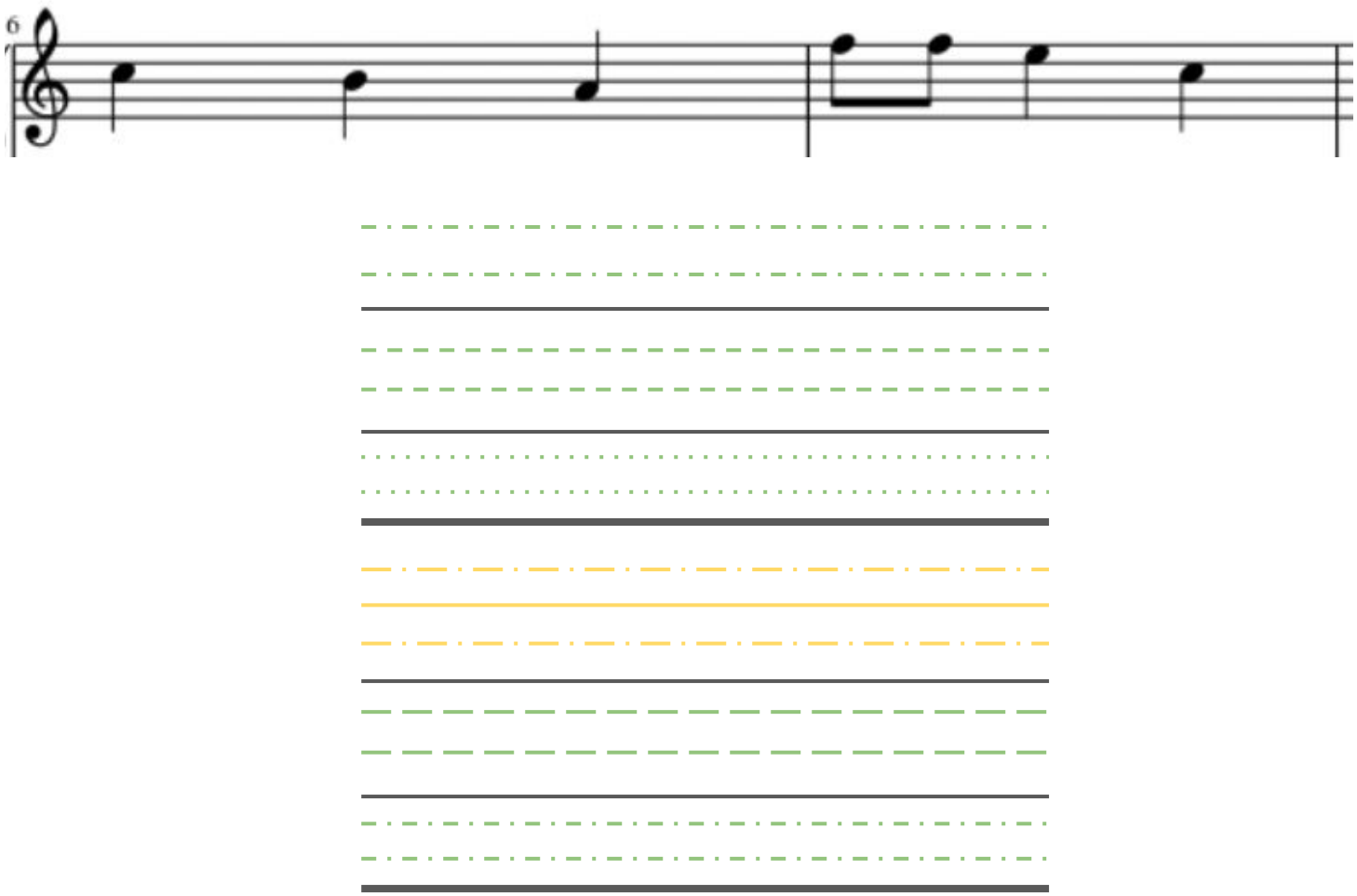

Figure 6. Combines the concepts from previous figures to demonstrate how the final translation of music may appear on a textile.

Final Project Documentation

Laura Helgeson, *Mozart - Symphony No. 1* , 2024, Handwoven fabric, cotton and wool yarns.

All photographs by Mario Gallucci