Master's Thesis

Marco Vargas

Instrumental Transformers

Practical reapplication and re-contextualization
from the older Hardanger fiddle aesthetic
to a modern guitar

Telemark University College
Faculty of Art, Folk Culture and Teacher Education

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Abstract

The objective of this project is a reaction and interest to the aesthetical aspect of the early type of Hardanger fiddles. This study has established a time line which corresponds to the period where this type of instrument had been manufactured.

The nature of this project which concerns the traditional arts has been the right path to explore the aesthetics of these musical instruments as historical objects.

This research has met the issues given by the aesthetics in these instruments through historical methodologies, aesthetical analysis and a deeper exploration of the findings through a practical work.

The results acquired by this research met a need for understanding these instruments through history and cultural context. A recognition of esthetic elements, arrangements and a phenomenon of the interaction between symmetry and asymmetry. Such information was a rich ground in where the practical part of this work found inspiration and influence for to develop a design for a modern product.

This research is founded in the reapplication and re-contextualization from the older Hardanger fiddle aesthetic to a modern guitar.

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www.digitalmuseum.no: Figures 5, 6 and 7. Kjell Bitustøyl: Figures 8, 15 and 16. E.H.Gombrich: Figures 9 and 10. Egil Bakka: Figure 11. Charles Zembillas: Figure 12 (Venus de Milo). Juan Diego Caballero: Figure 12 (David, Michelangelo). Hardingfeleprosjektet: Figure 18. R.Walker & Jim Tolpin: Figure 2.

1 Introduction

This project aims to use historical and technical evidence to understand, validate and explain the aesthetical elements of symmetry and asymmetry in interaction as a phenomenon which had been used as a sort of design principal in the manufacture of early Hardanger fiddles.

It is important to define the concepts of symmetry and asymmetry. Symmetry will be considered as a sense of proportion and harmonious balance, and asymmetry as an opposite to this. It is also essential to clarify the time line determined by this project, being 1651 the year which corresponds to the oldest instrument dated, and the 1850's the period in which the manufacture of this older type of the instrument (as concord by the academia) takes an end.

This project also aims to hand down this phenomenon as a tool for designing new visual material. This visual material is not created as a copy nor as a form for representing the observed objects, but as a new object, influenced by the solutions used and recognized from the works of the artisans of these early instruments as a way for communicating an idea.

From a historical perspective the information exposed by this work is the result of a desire to register, recognize and explore the phenomenon in the studied instruments. A historical interpretation is vital in the case of a project grounded in tradition, because tradition is built up from events through time and space. In the context of this work, history can be understood as the result of the phenomenon in question. Without a historical approach one might find it difficult to sustain such phenomena as a result of passed down techniques and cultural conventions. Through this research, I recognize and interpret the use of the phenomenon as guided by the discourse that dominated contemporary to each instrument and which changed through the years, influencing the development of the phenomena. I have registered two main tendencies of recognizable aesthetical characteristics related to these. The oldest instruments show a greater impulse toward an ornamental format, developing through the years to show a clearer need for purely decorative composition. It is thus important to clarify that ornamental and decorative are not distinguished by the nature of the elements used but rather by the arrangement and highlighting of the elements. These tendencies on the Hardanger fiddle can be seen by either a predomination of more

asymmetry in the case of ornamental arrangements where no embellishment was truly necessary to create meaning, or more symmetrical arrangements for decorative purposes getting closer to the 1850's and the Renaissance impulses.

From a technical perspective we recognize that the phenomenon was used consciously and not as a result of technical ignorance or failure. I will show that the preindustrial artisans had the tools and the knowledge for executing works with a high understanding of proportions. The technical evidence is a strong support to validate historical information and to understand both aesthetics and construction through principles like form follows function.

The aesthetical analysis performed in this paper seeks also to determine characteristics of different stages in history through the recognition of elements and aesthetical arrangements. If artisans of what we today call folk arts did not follow aesthetical rules or fashions they did adapt these influences into their own works to a certain degree. How much they adapted these influences can be traced through an aesthetical analysis.

The practical work is the result of the observation of this phenomenon in the historic material and a fascination with the aesthetical solutions employed by these artisans. As referenced before, the product of the practical work is only influenced by the phenomena and presented as an individual interpretation of aesthetical possibilities in instrument making based on the traditional design practices. In addition to the method of establishing an idea of design, the selection of materials to work with and the techniques used are founded in the information passed down through tradition. Such solutions of musical instrument construction are part of the knowledge of the trade and it shows that the artisans of the Hardanger fiddle had a broad understanding of them. Instrument making in the case of this project does not aspire to specific sound qualities but solutions in aesthetical design and material.

The importance of this research relies thus in the recognition and use of a traditional source for creating new visual material and the interpretation of traditional design using a historical approach.

2 Problems

What characterizes the aesthetic expression shown on Hardanger fiddles dated 1651 to ca. 1850?

I draw knowledge and inspiration from this aesthetic expression to suit a modern instrument by building a guitar.

3 Methods

The design of this paper follows three different formulas for researching that suit the nature of the topic which we are investigating.

Because we are facing historic objects I found it necessary to face this research through historical methodologies with the intention of gathering, examining, selecting, verifying and classifying historical facts and events that might have originated and driven a development of the phenomenon in question, satisfying the need to interpret such in a historical and cultural context. Considering this, it is important to note, that this project will define 'history' as the discourse of historians and not the 'past'.

Since we also face objects which today are classified within what we call folk or traditional-art we might take in consideration the concept 'art', because this inevitably places us in the world of aesthetics. And from this perspective it will be necessary to conduct an aesthetical observation of the material.

Third, is the actual practical process, which includes the implementation and creation of an idea for a design that will be executed to a finished product.

4 Historic-Cultural Part

I have chosen to investigate one of the Hardanger fiddle's many secrets - proportion. By proportion I mean not only visual proportions, but the design and structure observed in construction of these objects. I am looking at early instruments that have held up through the years - with imprecise designs on their complex ornamental patterns, monstrous heads that crown their peg-boxes. At first look these objects can give us the feeling that we are observing an instrument of poor quality or perhaps rather hastily constructed (recognizing that the art of making instruments is not characterized by simplicity). Upon closer investigation we might be inspired to ask: How can we perceive these instruments as simple and complex simultaneously?

I might then not only by curiosity give a more dedicated look to these interesting creations because certain questions arise. We take for us objects that today are classified within what we call folk or traditional-art. I emphasize the concept 'art', because this inevitably places us in the world of aesthetics. From this perspective I ask and attempt to answer questions that deal specifically with techniques and levels of expertise employed in designing and manufacturing.

I refer to the concepts of 'folk' and 'tradition', because we are looking at historic objects accompanied by very little or no written record to help us understand their existence and development in a historical and cultural context. We face aesthetic elements layered on extreme mysticism. What function did these elements play in the lives of the objects' creators? Were they individual creations or collective patterns, of local origins or foreign influences?

I believe that the instrument itself and all that it entails as a material object does not show us the answers, but a blurred scenario. Yet, I postulate that we can simultaneously see and understand to some degree the existence of an identity of these elements and their aesthetical arrangements as they are reflected in certain historical moments through cultural and social behaviors. In the following chapters, I try to understand these issues of identity through certain events and historical evidence.

4.1 Some aspects of the workshop and tools.

First, I feel the need to discuss my experiences with the techniques and tools used for design and manufacturing in the objects studied and the degree of skill in the discipline, which in theory and practice had been used by these artists. My goal was to dispel the myth that the observed symmetry or asymmetry in these instruments, was a result of a lack or richness of skills. After taking a look at some aspects of the workshop and tools I suggest that any perceived 'imperfection' is not a result of lacking technical skills, but rather a choice made by the craftsman; the creative process guided either by symmetry or asymmetry, they compose aesthetical designs for their works which we call ornaments and decorations.

4.1.1 A description of the workshop…

While it may not be possible to reveal the exact idea that gave rise to these designs, I believe that investigating the workshop and tools, where and how artisans ideas were executed can elucidate the design process of aesthetical compositions. Therefore, it is necessary for me to explain some interesting points, describing the workshop and tools that might have given life to these creations.

For example, let us look at this excerpt of an oral record found in the newspaper Efterretninger fra-Adresse Contoiret i Norge i Bergen, nr. 46 of November 17, 1766, article under the name of "Viol-Mageriet Efterretninger om i Vigøers Præstegield i Hardanger"

> *Han kom en Aften silde reisende og for Mulm og Uveir maatte søge Havn og Huus hos Isaak Botnen. Den Reisende blev indlukt i Stuen, hvor der var velmørkt. Da han spurgte efter Manden i Huset, blev han svared:Han sitte innar aa arbeie. Den Reisende blev og vaer det han aldrig havde troet mueligt, at Isaak Botnen i sligt Mørke forfærdigede og indlagde det fineste Elfenbeen- og Træ-Arbeider paa Fioler. Da den Reisende derover tilkiendegav sin billige Forundring, svarede Isaak Botnen ham, at han fortroede sig mere til sin Følelse end til sit Syn, og efterdi hans Fader (:forbemeldte Niels Botnen) i Alderdommen blev blind, havde han altid saaledes forestillet sig samme Skiæbne, at han derfor fra yngre Aar havde lagt sig efter at arbeide i Mørket.*(Aksdal 2009 p. 59-60)

In this account we learn about the room where Isaak Botnen worked, characterized in the description by its darkness. While this surprised the visitor, I wish to mention that the

practice of working in the dark in workshops manufacturing violins or instruments in general is not an isolated case.

Here, I refer to the intuitive art of carving in a dark room with minimal light during strategic points in the work to meticulously deduce lines that form contours/shapes and in some cases discover the thickness of certain parts in instruments. This requires only a small source of light and the human senses.

The darkness could be described as an element that serves to focus and sharpen the senses. Sufficient light directed opposite of what is being worked accentuates the contours, exposes an arch or a harmonic curve (or the opposite, characterized by uneven shadow shapes), focuses the eyes only on what it is worked, while darkness isolates the unnecessary or what is conceived as disturbing. Similarly, the absence of light, a state of emptiness, invites the senses of hearing and touch to merge with the material and the rest of the inventory and workshop due to a sense of confinement, allowing for clearer judgment (in the opinion of the practitioners of this art) in the execution of the work.

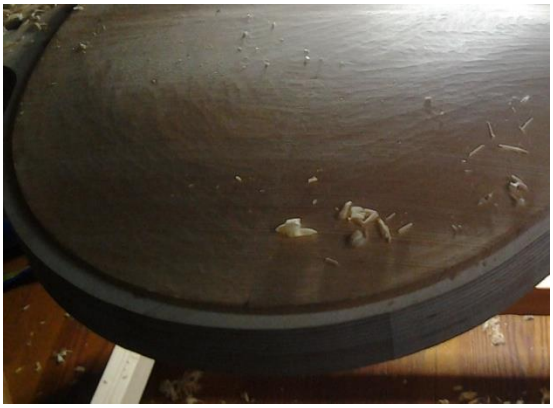

Figure 1 Darkness a medium for carving

According to luthiers as Robert Benedetto, Chris Johnson, Roy Courtnall and many others , this technique in the art of violin making was and is nowadays a very common practice. I note that no reference in this excerpt specifically about carving in the dark. However, we can infer that this artisan used this technique based on its prevalence at this time. If not what would be the purpose of working in the dark? Considering that, Isaak Botnen was a man who used to work in the dark from very young age, and with some security long before blindness may have affected him (as it did his father).

I should also note, that it would not be a surprise this common technique in the workshops of professional luthiers on the European continent might have been acquired by this artisan

though the same way in which he obtained knowledge of the recipe for a special varnish for Violins from a German luthier (Aksdal 2009 p. 110). It is therefore not unlikely that this method has been transmitted through tradition as a practice in the workshops in Norway until the present day.

> *Du må søkje å få ein jamn overgang frå randpartiet til dei lågaste måla som bakkane har. Frå bakkane skal det vere ei jamn stigning over til midtfeltet i botnen. Randpartiet i bøylane har lett for å bli noko for tjukke. Det får dei ikkje lov til å bli. Resultatet av for tjukt randparti i bøylane blir svekka resonans i fela. Ved sida av mikromålet bruker du lys til å kontrollere tjukkleiken på plata. Best gjennomlyser du plata ved å halde ho framanfor ei kontorlampe i eit rom der det elles er mørkt. (Sandvik 1983 p. 71)*

Here we have focused on the darkness, how it can be used as a tool in the search for harmony in the material - what we might call symmetry. This search for harmony in the material is based on what we might call as 'sense of proportions'.

4.1.2 About some tools…before the industrial revolution

In this section we will look at some common hand tools because the use of these tools unveil some general questions about the quality of results obtained by a craftsman, particularly before and after the 1850's. At this time the industrial revolution introduced machinery and a production based mentality into the workshops of Norway. Therefore, we will also look at the influence this transition had on artisans going forward.

Everything can become very confusing at the moment we enter the world of hand tools at least as it concerns woodworking and the workshop prior to the industrial revolution. We are suddenly faced with hundreds of different tools and each with different purposes and it becomes even more complicated if we also look at the machinery.

For this reason we should start viewing these tools in their primary role, dropping their specialized function. If we see it in this light we can say that there are groups of hand tools and machines that have the same purpose such as cutting, shaping, planing, etc. For example, if we take a coping saw and a mechanical band saw, regardless of their appearance and unequal way of dynamism, both fulfill the same function 'cut', and looked from this perspective there is nothing that differentiates them from each other.

For this I suggest that the main difference between machinery and hand tools is not related to function, but to productivity and refinement in the process. Therefore indisputably

machinery can be characterized by productivity and hand tools for their accuracy and this of course being a fact regardless of the skill of the performer.

I direct my focus on a primarily a pre-industrial period thus, we are looking at workshops completely dominated by an inventory of hand tools. This leaves us with the mystery of the differentiation between common and specialized tools, keeping in mind that the primary purpose of the tools such as saws is cut, brushes brush, etc. At this point I want to suggest that the main difference is based only on the difficulty or ease that these tools give us to complete the tasks at hand.

It is important to make this differentiation because we are studying pre-industrial, mostly non-professional craftsmen likely without machinery or specialized tools for musical-instrument making. It is necessary to take into account that most of the instrument makers were practicing peasants rather than artisans, however we cannot discard that they may have produced and used specialized tools (although there is no relevant historical documentation of this). Usually they did have an inventory of standard tools as within any wood shop or we could say also common tools for work on the farms in the period studied (hand saws, hammer, brush, etc…). These were all necessary to build functional objects for the life on the farm and all necessary for a skilled man that makes instruments.

Considering that wood and woodworking was one of the most important resources for the subsistence of the population at this time, I found a limited number of essential tools for producing wooden objects characteristic of the historical period in which I focus while perusing Norway's national digital museum (http://www.digitaltmuseum.no/). We could say that the recovered material is scarce, at least in the archives of the digital museum, but this is not a surprise since most of these items were made predominantly of wood and thus susceptible to disappear from use. From this point of view, I suggest that the shortage of evidence does not indicate a non-existence in the use of these tools in the manufacture of Hardanger fiddle during the period indicated by this document. I suggest this, based on the existence of procedures that are not possible to achieve without them and this evidenced by the accuracy and quality of manufacture observed both through work on this project and by various institutions and professionals.

> *Jaastad-fela er også et svært godt håndverk, og den er trolig ikke det første instrumentet denne felebyggeren har lagd.* (Aksdal 2009 p.43)
>
> *Målinger viser at instrumentet ikke er et tilfeldig amatørarbeid, men er utført med profesjonell nøyaktighet...* (http://hardingfeler.no/)

Having presented the common tools used for construction of the Hardanger fiddles, I turn my focus to a point of great importance - the tools that transform the idea of a craftsman into a visible object. I refer to the tools used for design, the tools for measurement. Here, the industrial revolution plays an important role, because it was this period that terminated the Artisan-age and everything that entails, such as methodologies for designing. And so with its ideology of productivity the industrial revolution gave birth to standardized measuring systems. These systems that were intended and designed to be read by machines which required some degree of programming to function. The question is then what measuring systems were used by artisans before the industrial revolution to create such precision in their products if there was no standardized system like those we use today (metric or imperial)? We find the answer throughout the history of mankind from as far as the evidence of the first artisans in ancient Egypt and its pyramids, the Greeks and their architecture, Leonardo da Vinci and his drawings of the human form, and Stradivarius violins: geometry.

How did these artisans use geometry in practice? Consider simple geometrical shapes found in nature. I consider the circle as the central figure and along with its counterpart the square. I suggest that through simple geometry the artisans prior to the industrial revolution, including craftsmen who built Hardanger fiddles, had the tools, including the foundation and familiarity with the craft, to understand the world of proportions a greater ease.

Now, if we can agree on one point, this being the fact that one of the three essential functions of proportionality is to create symmetry. We can also agree that a circle is a figure formed by a curved line that has no beginning or end and which is an autonomous manifestation of symmetry since all the points of the circle are equally distant its center.

In the two images below, I make the following observation and not a comparison about how the symmetry of circles as a way to use geometry may result in the design of these musical instruments. The first is a reconstruction of the archetype violin mold used by Stradivarius and the second is this archetype applied to a Hardanger fiddle built by Johannes B. Tveit (1786-1847) (to take one example). We see in this Hardanger fiddle the existence of mirror image and axial lines, demonstrating an understanding of proportionality. We have then a historical documentation of how a craftsman like Stradivarius used geometry on in his designs. While I do not propose that the artisans in Norway had the same way of using geometry I do suggest that they shared a common sense regarding proportions.

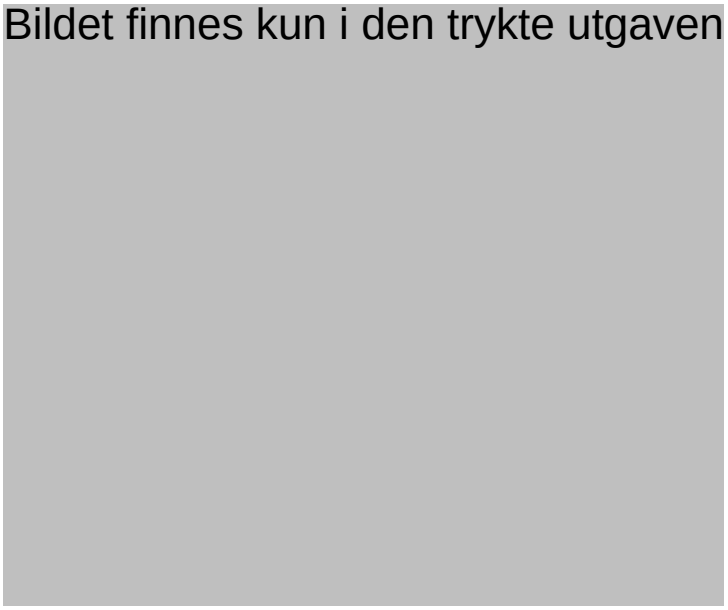

Figure 2 Reconstruction of the archetype violin form of Stradivarius

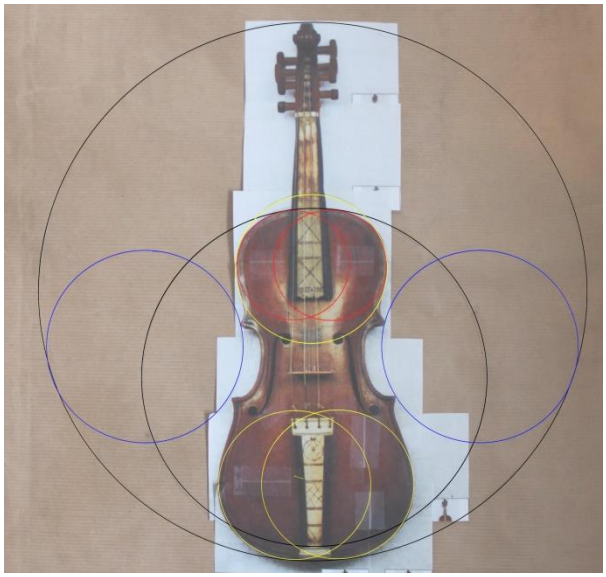

Figure 3 Hardanger fiddle built by Johannes B. Tveit

I would then like to introduce a set of tools that it's known from documented sources was used long before the arrival of the metric system in Norway (ratified by Royal Decree of May 5, 1875, and that the Norwegian Parliament unanimously approved on May 26) and much before the arrival of the machinery (with the Industrial Revolution between the years 1845 to 1875 in Norway). I refer here to the dividers/compass, the straightedge, the square and the sector. Tools that essentially do three things: provide straight lines, swing a circle and divide those two.

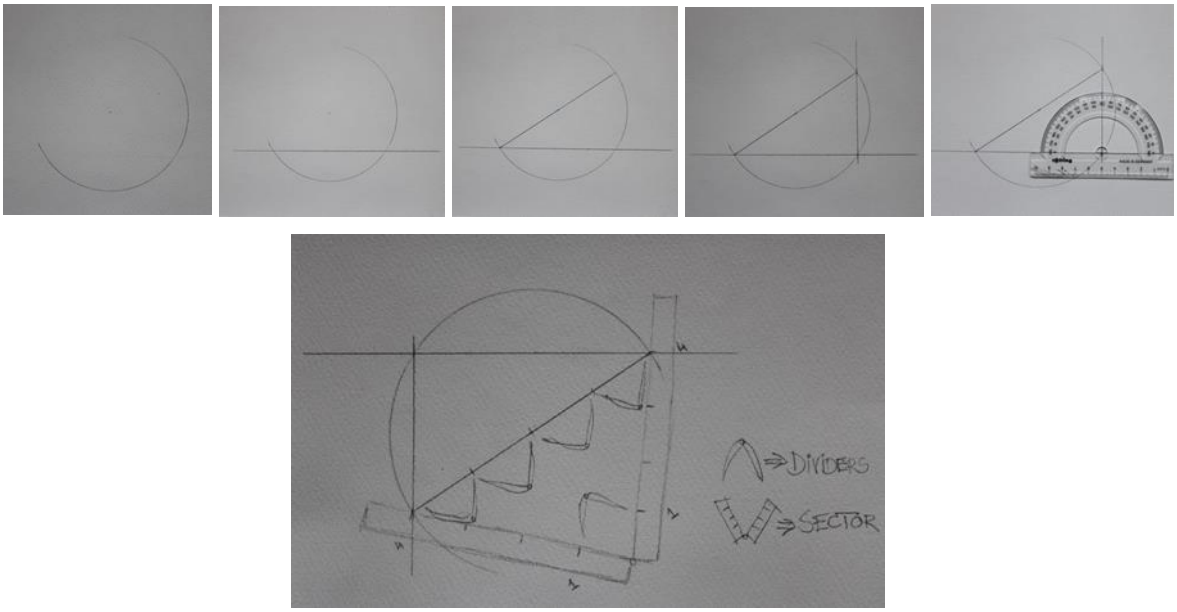

Figure 4 Artisan geometry

These tools were mostly built of wood, easily constructed in the workshop, thus also easily worn by use (most often the straightedge and square). They rarely give an indication of date or name therefore it is difficult to locate and recognize them in a historical context. Notwithstanding some tools like these exist in the archives of museum shown in the following pictures, to left a dividers from 1737 with initials OSSM made of birch and iron spikes registered by the Museum of Aust-Agder, and to the right a dividers from 1766 registered by Norsk-Folkemuseum.

Bildet finnes kun i den trykte utgaven

Figure 5 Dividers

Below we see a sector in the hands of this farmer from the Western part of Norway, painted by Johan Friedrich Leonard in 1800 - 1833, registered by Norsk-Folkemuseum museum.

Figure 6 Farmer with a sector, painting by Johan Friedrich Leonard 1800-1833

And here a square bellow, inscribed with the year 1761 registered by the museum in Sunnmøre.

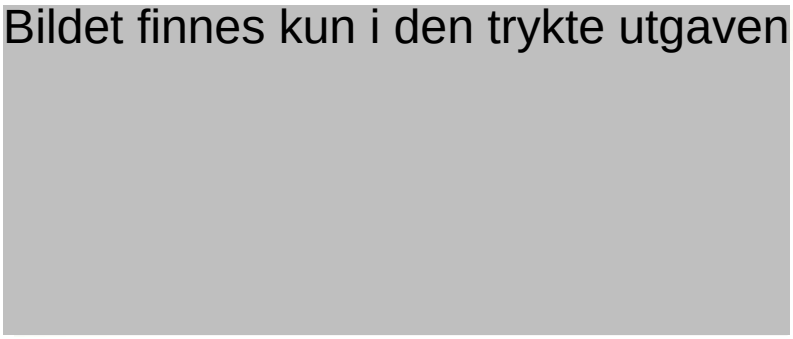

Figure 7 Try Square 1761

This evidence that shows that such tools were also part of the inventory of the workshops in Norway and that they probably were used with their original function, and not as almost ornamental objects as very usual in today's workshops.

> *"Artisan Geometry" is what we are calling the form of geometry employed by pre-industrial craftsmen, using the simplest of instruments and strategies to proportion spacings, draw lines at certain angles and to create a wide variety of shapes that underlie the form and decorations of their traditional designs. Their geometry was not concerned with proving Euclidian theorems or solving or expressing algebraic equations, but rather with finding the most efficient ways to design and lay out their work. For the artisans it was all about straightforward spatial relationships and not about arithmetic and number theory. In other words, it was a tool of the trade…"*(Walker & Tolpin 2013 p.97)

4.2 The instrument ornamental or decorative, a contradiction?

I have started this paper by entering the culture of the workshop, with the desire to have a clearer understanding of the earlier Hardinger fiddles as historical materialized objects, I believe from the evidence that these artisans, although it is not certain they were seeking aesthetic perfection, they did have skills that could be called ‘advanced’ in the use of wood working techniques. This is reflected in the construction well manufactured structure of this. While not wanting to dwell on the acoustic qualities of these instruments we could also say that their design and form follows function as musical instruments producing sound. I think that the fact that people manufacture and make use of musical instruments as part of creating and sharing space in social life in a culture must and should be a natural, almost inherent human phenomenon. But what is giving these historical objects function as objects of visual art? We are now examining richly ornamented and/or decorated artifacts and our analysis is independent of acoustic considerations.

We have now established that the workshop and tools gave the necessary foundation to the artisan to develop a good, beautiful or proportioned work. But, here I want to take up a question. Although the techniques implemented in the design of these musical instruments shows great skill and fluency in the knowledge of proportions the techniques implemented in their ornamentation and/or decoration show us to some extent the strictly opposite. What is the reason that produces a feeling that these craftsmen carefully worked part of an instrument and simply or almost naively completed the rest?

Carving customized motifs in the peg-heads of these instruments is definitely not an easy job. ‘Carving’ is a profession in itself. But can we say that it's more complicated to carve a motif on a peg-head than carve a soundboard which must have a certain thickness at various points for to be able to vibrate and create sound?

We observe the complex compositions of mosaics and we should recognize that to create symmetry on them should be needed a certain degree of patience and thoroughness. Aren't these qualities shown in the simple act of manufacturing a musical instrument that actually works?

It seems that covering the bodies of these objects, motifs find any free space to settle and exist, they move with disproportionate vibrant lines to scribble something that time and use wants to erase. Hand in hand with this chaos we find fine symmetrical lines that give their peculiar feature to these instruments’ silhouettes.

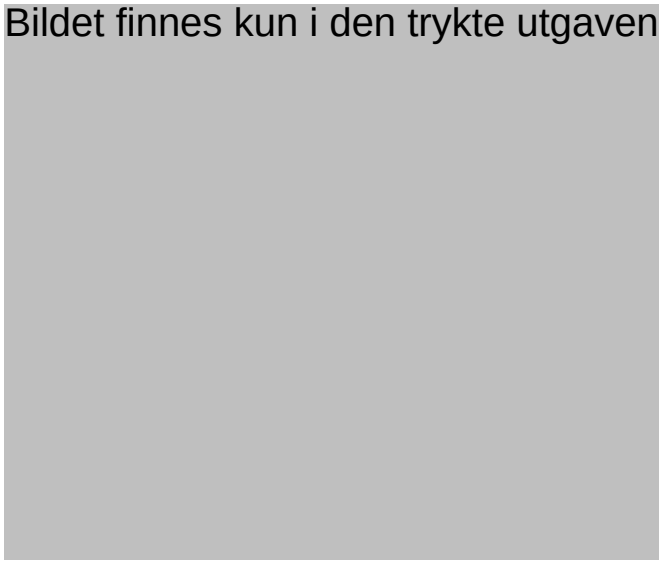

Figure 8 Hardanger fiddle decor details, Kjell Bitustøyl

I believe with closed eyes (to put it in some way), that to understand this particular phenomenon we must apply a design principle known as "form follows function." To apply this principle I think we must consider these artisans and their works not individually, but as a group participating in a culture with a particular historical context since we know that this phenomenon I call contradiction was to some extent a shared trait.

Then if we start taking a look at the first instrument dated 1651, we put ourselves in front, we observe it, and finally we make ourselves a question that would seem simple at first, 'ornamental or decorative?' It is thus important to clarify the concepts of ornamental and decorative, because these are not distinguished by the nature of the elements used but rather by the arrangement and highlighting of the elements. To clarify, one such element we could consider is a cross, which if situated alone in a table it might have more than just the function of embellishment and would be most likely an ‘ornament’ charged with a strong religious meaning. If instead of having a single cross, we place in the table a border built up from hundreds of small crosses they will have a primarily decorative function, embellishing the table and perhaps highlighting the table instead of the crosses. If we choose decorations and apply the design principle just mentioned, we come to where I believe the contradiction originates. The concept decoration brings us directly to the world of the aesthetics. We evaluate based on what is beautiful/ugly or complacent/unpleasant, and inevitably we put an eye on the discordant execution of the techniques applied. I refer here particularly to this instrument called Jaastad-fela, an interesting instrument not only for being the first dated in its class (estimated from a correct date), but also because of this phenomenon which I talk, a adressing - the surprising presence of symmetry in its

structural composition and asymmetry in what would be its decoration. I refer to the peg-box with an unidentifiable figure, a mosaic with chessboard pattern in disorder and countless diversified drawings on its sides and soundboard. Strange. But the idea of thinking in decorative compositions is not strange if we apply it (taking an example) to the instruments created by Erik Johnsen Helland in the 1800's, in which we inevitably can note that there is no such contradiction.

On the one hand, I understand there is hypothesis which states that these historic artisans did not have good taste or a notion of aesthetic details resulting in to these phenomena. We could say they had not been introduced to an aesthetic knowledge. Contradictory, no? If they had no such notion, how could they create symmetry in the shape and form of the structure in their instruments, taking into account that 'symmetry' is the foundation of what we today call as beautiful or aesthetically successful? I have also heard the hypothesis that different persons could have worked in one single instrument, one in charge of its acoustical characteristics and another in its aesthetical aspect. This fact is possible to confirm in some cases as in the case of the Hardanger fiddle manufactured by Ole Laulo and Johannes Tveit, registered and documented under the RMT inventory number 2008/12 (Ringve museum). Independent of such cases it is difficult to substantiate multiple artisans contributed to original construction of older instruments and I believe unlikely.

Well, if we chose otherwise 'ornament', defining ornament as an element that is not exclusively tied to visual pleasure, but esthetical one that might speak for itself (metaphorically speaking) and is related to an individual or collective speech. In this case, this contradiction seems to vanish for a moment if we ask: if is symmetry necessary for these elements to function? A simpler way of putting it would be that it's not really necessary to create beautiful elements to express an idea. Contradiction tends to vanish if we apply this conception to what we might call ornaments in those instruments at an early stage, but such an the aesthetic principle to which I refer. This idea tends to become irrelevant moving towards the Renaissance for an aesthetic concern is gradually evident, shown by artisans on their instruments.

Thus I wish to present the idea that these elements have evolved from primarily an ornamental function to a fundamentally decorative function. And I try to understand and explain this through two stages of history, the theocentricism of the Middle Ages and the anthropocentrism of the Renaissance.

4.2.1 Theocentricism and anthropocentrism, ideas and influences.

We could say that regularly when we talk about periods or historical events it can become a formal and recurrently objectivist format of story. If we say that a period of history ended on a specific date at a certain place does not mean that people stop thinking and feeling as they did the year before. When it is referred that in Norway the Middle Ages had ended in the year 1536 with the introduction of Protestantism in the country, it cannot be suggested that the population converted to that religion in that very year. It also cannot be expected in the slightest that the entire population was Christian before or after this neither. For this I believe it is necessary to see the theocentricism not only as part of the Middle Ages but also as part of what we would call in formal terms the Renaissance, as part of the transition of this mentality developing to the modern ideas of the Renaissance, or 'anthropocentrism'. We should keep in mind that the Christian church whether Catholic or Protestant occupied an important place in the political, civic and social matters in the period which we are studying, not only confined to the life in churches or religious stays and therefore affecting society in general.

Thus, I suggest observing these Hardinger fiddles studied as part of the materialized memory in this context of transition from a theocentric state towards anthropocentrism. And I will venture to call these aesthetic elements as 'ornaments' in its early stage, ornaments as participants to some extent in their contemporary ideological discourse. In this particular case I do not refer to these objects studied as visual expression of the ideals of medieval Christianity, but as part of what the Christian church in this period still intended to eradicate, those old beliefs that in many cases we call 'paganism'.

I intend to unveil some evidence that I believe is important to suggest such. First, this controversy in the techniques applied to those early instruments which I have referred above allowing us to observe that the elements do not serve the function of visual pleasure as decoration or embellishment. According to E. H. Gombrich, it was not characteristic for art of the Middle Ages to reproduce or imitate objects with their real or natural characteristics, but to create compositions to illustrate certain events or scenes. What we call art became a way of clearly reading through the images. The artist dispensed with any dramatic action and everything that did not have meaning was simply discarded.

As an example we have the case of the Christian church in which art had the specific function of transmitting to believers the message of power and mercy of God. Below, we

see in this composition built through few simple strokes illustrating Shadrach, Meshach and Abednego who, after challenging the order of King Nebuchadnezzar II of Babylon, were thrown into a furnace where miraculously they are not burned by the flames. As Gombrich puts it, it was enough to illustrate three human figures, something that look like a fire and a dove to give instantaneous meaning to such scene at this moment in history. We know this because the subject was a current issue of socio-cultural and political discourse of the time.

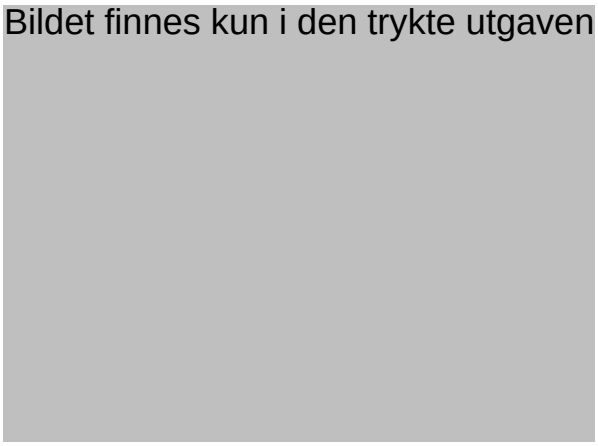

Figure 9 "The Three Hebrews in the Fiery Furnace". From the Catacombs of Priscilla, Rome, Italy. Late 3rd century / Early 4th century

I know that this was a recurrent / repeated way to use the visual material, because it was used not only in a religious but also in other social contexts within the medieval society. The next example, also shared by Gombrich, is an illustration of an elephant from the hand of the English historian, Matthew Paris (1259). The drawing represents the characteristics of this animal and specifically its size compared to the man, who is also attached to this drawing, exposing again an understanding of proportionality. And as Gombrich exposes, even though name of this person is quoted in the drawing itself, it cannot be considered a natural or real depiction of this man. While Paris demonstrates an understanding of proportions, we see clearly that he shows a non-interest in making a real or natural representation of these two figures. And why do I suggest that? Because it was uncommon to expect for realistic representations in this historical period. Because it was a missing or unnecessary function to create natural or real representations.

Figure 10 Matthew Paris, Elefant og vokter.Tegnet 1255. Cambridge, Corpus Christi College

I present then another example in order to share a point that I believe to be important. We will see in the following image format a similar way to illustrate a scene as it is manifested in the two examples above, I refer to the characteristic way of producing visual material in the period we call the middle Ages. This is a photograph taken by Egil Bakka, of a painting found on a cabinet door located in the rural area of Selbu in Norway. One point to note is that the type of format used is not an isolated case in the country; it is a recurrent form not only in painting, but in a variety of crafting disciplines in the historical period in which this was manufactured. While we see that the elements used here as in the previous examples, do not reflect what we might call real forms, they are recognizable to some degree. And independent of how interesting the significance of this scene can be, the relevance to which I point out lies not there, but in the year in which this was manufactured. This painting is dated 1784, which would not correspond to the period we call the Middle Ages, but falls within the one we call the Renaissance. But why is this relevant? This demonstrates the function of delivering meaning through symbolic elements using this form of expression and language well into the Renaissance. It demonstrates that this way of creating scenes, characteristic of the Middle Ages and is still in common practice in the Renaissance, lies in the use of visual language driven not by a need of the decorative (embellishment), but of the ornamental (speech).

Figure 11 Cabinet door from Selbu. Picture: Egil Bakka, Rff

It is necessary to insert a small parenthesis and suggest that this type of visual language did not necessarily arise due to an absence of the tendencies of Renaissance art, illiteracy or misinformation in general or geographical isolation from the mainland or within the country. Free from the requirements of adhering to the strict continental art influences, the socio-cultural discourse we find in certain sections of the society in the country at this period dictated and dynamized artistic expression. I do not mean to imply that this visual language is what can be called ‘country science' nor 'primitive stupidity' as discussed by Pierre Bourdieu in his Genesis and structure of the religious field. If this were the case, how could we justify the presence and performance of a violin, an iconic instrument of the Renaissance in this painting? Or for instance, how could we justify the existence of this special symmetry and the similarity to instruments of the Renaissance found in the Hardanger fiddles of the period in which this painting was made and much earlier than this? We simply refer to a different way of seeing life as individuals and in society than that imposed as a model by the society and politics of the bourgeois of those years.

So returning to the issue that concerns us and repeating the above, which was that not only in painting if not also in other forms of visual expression was this phenomenon also given as seen in the Hardanger fiddles. Although here lies a problem that is difficult to attend or easy to distort. Since we found such an absence of documents ascribing meaning to the ornaments presented, at least those made at an early stage, there is a tendency to transform and translate these elements to no more than in scribbles, unsurprisingly understood as misuse or aesthetic ignorance by these artisans. And the more this scene appears to us the cloudier it becomes. Oral tradition demands that these elements be classified into a world

of magic. I refer to this fact facing the abundance of elements used in at least those we might call the first Hardanger fiddles, as in the case of Jaastad-fela. And I mean confusion, mainly because our current reality alienates us from the concept of magic and the real purpose of what was and is that which we call today as folk-art.

We might then accept from the historical evidence that writing was not necessarily the recurrent form used to transmit a message in sectors where popular culture was given, but oral and visual tradition. Here I refer to this tradition in the part of the culture which is estimated as 'non-elite'. Thus the few aesthetic elements from early Hardanger fiddles which documentation exists, or rather, an oral documentation at least in those concerning elements at an early period are those which will commonly be called as 'Muruspjeld'. This motif is represented by geometric figures, square or triangular, black and white, light and dark, just squares alternately arranged like a chessboard, or commonly also represented as fishing net. And also, the motif called 'Åttebladsrose' which created through numerous circles forms a particular flower. Ornaments of which it is said, through the oral tradition, is a way to protect from Mara / Mare.

But who or what is Mara / Mare? And are we trying to suggest that these aesthetic elements are a form of protection? Or do we mean that this is part of a visual language, if we consider it as such? What relevance could they have within the historical context of which we speak? And finally how this is relevant to the matters that concern this study?

I believe then that for to answer these issues, we must inevitably start by answering the first question. A good source that defines the existence and nature of this thing called Mara / Mare are in the studies presented in the doctoral work of Éva Pócs, and which describe this entity as follows:

> *Mara/mahr/mora creatures are the characteristics embodiments of double images, as well as for the creatures that have doubles – for example, the seers who are capable of trance. Slav researchers write about the assumed Indo-European relationship between the Germanic mara/mahr/mare, the French cauchemar, the southern Slavic mora/mura/zmora/morina/Morava, the eastern Slavic (kiki)mora, the Romanian moroi, and so forth; one probable source of origin is related to the Indo-European word *móros (death). The same creatures can be known under different names – for example, the German Alp or Trut.*
>
> *I will enumerate the most characteristic features briefly below without going into great detail about the rich and rather varied mara/mora images of Europe. The richest historical source about them is the Germanic literature of the Middle Ages, and in the Modern Age a wealth of data was collected about Swedish, northern and northeastern German, as well as southern Slavic belief systems. These creatures (the term "mora creatures" is used from here on to refer to all European versions) are in close relationship with the images of doubles mentioned above: mora creatures are generally human beings who are able to send their souls out at night while in a trance. Thus they can make journeys by assuming the shapes of animals (snakes, butterflies, mice, hens, cats). They infiltrate people's dwellings as incubi,*

confinement demons, or even as vampires, and they "ride upon" or torment people.(Pócs 1999)

We have evidence of such a demon, or to put it another way, of these beliefs, which are not only present in Norway, as exposed before mainly through the oral tradition. And interestingly we can assert that it is not uncommon to hear in the environment of folk culture even today and as part of the speech stories or simple references regarding this.

Det blir fortalt om Mara at hun ikke kunne telle lenger enn til tre. Når hun såg marekosten, eller andre magiske tegn, begynte hun å telle «stikkene», og ble aldri ferdig.

Hun kan nemlig kun telle til tre, og jo mer innfløkte disse magiske mønstrene er, jo mindre er sjansen for at hun kan komme seg inn.

Additionally, we can also find some written material in Norway referring to this demon and his actions as in the case of the witchcraft imposed upon Vanlande in Uppsala, from Ynglinge-soga:

Da Huld tok til å seide, var Vanlande i Uppsala, og da vart han huga på å fare til Finland. Men venene og rådsmennene hans nekta han det, og sa det kunne ikkje vere anna enn trollinga til finnane som gjorde han så huga på å fare. Da vart han søvnig og la seg til å sove. Men best han hadde sovna av, skreik han og sa at mara rei han. Mennene hans sprang til og ville hjelpe han; men da dei tok han oppe i hovudet, så rei ho beina, så dei heldt på å brotne; da tok dei til føtene, men da kvelte ho hovudet, så han døydde. (Snorre 1979 p.12)

And also as in this other abstract, spell collected in Telemark by Andreas Faye and found in a text entitled 'Folke-Sagn' and dating from 1833:

"Muro! Muro! Minde! Er du herinde, Saa skal du herud! Her er Sar, her er Spjut! Her er Simon Svipu inde.(Faye 1833 p.86)

Or as in the following, an English version that makes Frederick Metcalfe similar to the previous spell collected by Faye and that is part of a series of travel notes which has for name "The Oxonian in Thelemarken; or, Notes of travel in southwestern Norway in the summers of 1856 and 1857. With glances at the legendary lore of that district":

This exorcism is then pronounced —

Muro, Muro, cursed jade,

If you're in, then you must out ;

Here are Simon Svipu, scissors, blade,

Will put you to the right about.

> *The birchen charm may remind one of the slips of yew "shivered in the moon's eclipse," in Macbeth.*
>
> *The term " svipu" is used in parts of the country for whip, instead of the real word " svobe." And I have no doubt this is the signification of it here — viz., a means of driving away the mare.** (Metcalfe 1858 p164)

We might think then that, as we are told through oral tradition, that these complex compositions are looked upon as magical symbols with a literal and not figurative meaning. That is a tautegorical reading of the elements. The elements are literally a trap to protect against this evil called Mara / Mare. And thus a tool conventionally used as part of a visual language. And while such entities and their actions in these stories and tales are or may be of interest, either as folk culture or otherwise, this is not what I claim to be most relevant to our research. The goal is not to expose these written and oral reports to validate the supernatural powers of these beings or magic formulas, but to observe and understand the existence of an ideology which I believe from historical sources was part of the Norwegian culture at the time in which I refer. An ideological system that affected in different degrees the whole community and which was called and condemned by the Christian church as witchcraft.

Although as I have discussed before there are not enough written sources that tell us fluently about the significance and function of the ornaments used in these instruments and by the community of this period (taking into account the divergence or fading that may exist in oral transmission through the years), we do have written historical sources which validate the existence of such an ideological system. A system that was practiced and that had direct relation with such elements. I refer with this to the witchcraft trials which were carried out in the country, black books and legends, which are possible to examine in the archives of various legal documents from 1500 and into the 1700s referring to around 900 known cases of witchcraft trials in Norway and approximately 100 manuscripts of what would have been commonly called as magic. And as above I shouldn't forget to suggest, that I do not believe that the facts that would have led to such processes had a supernatural nature, but rather were based on neighborhood conflicts, a phenomenon called by Éva Pócs as "neighborhood witch" or "social witch". This phenomenon can be recognize in the case of Anne Pedersdatter's trial in Bergen. Process and events that we could understand as suggested by Nils Gilje, as the Christianization and disciplining of popular culture.

> *Fleire av historiene forteller at både Isak og Trond hadde forbindelse med hinmannen, noe som sikkert har sin årsak i at ikke alle i hardangerbygdene så med positive øyne på felebygging og felespill. Et eksempel på slike historier er at den dagen de skulle til kirken med liket av Trond, blåste det opp til storm, og de måtte derfor sette fra seg liket i ein steinheller ved fjorden. Da de senere kom for å hente*

liket og ro det til kirken, hadde hinmannen allerede vært der og hentet det. (Aksdal 2009 p.67)

As we must be aware it is unlikely to ensure that the artisans of the time have had any role or supernatural power, creating truly magical artifacts for to protect from evil entities. But we can in some degree place them within such magical ideology through oral and written stories. And we could understand that if the main point with these aesthetical compositions was to confuse these demons for to keep them away, asymmetry would not be but the right tool to use.

I wish to suggest then that this characteristically medieval practice of Christianizing or colonizing popular culture through religion is also reflected in the use and disposal of aesthetic elements on handcrafts and therefore also on Hardanger fiddles, mostly in or nearby urban areas. As an example we can see notoriously drastic changes comparing with Jaastad-fela in the use of aesthetic elements already in the 1750's near Bergen, and particularly in those instruments that took more clearly the appearance of the violin. These left aside almost every kind of ornament or decoration. In spite of this we can still see, well advanced into the 1800's, richly ornamented instruments that are similar in appearance to Jaastad-fela in the more rural areas of the country, in those areas where popular culture somehow still had more freedom to exist.

I can recognize independent from any influence themin effect at that time, a peculiar style in the western part of the country. The largest exhibitors of this style would undoubtedly be the Botnen family. Additionally, I would suggest that it was not primarily a need for aesthetic design, but rather an adaptation to ideological influences that gave shape to the appearance of these Hardanger fiddles at an early stage, either in the west or the rest of the country where these instruments where settled.

As we move towards the 1850's we gradually come across the term Renaissance which means to be born again. This term pointed directly to reborn from what is insinuated as the darkness left by the Middle Ages. If we focus on art unlike that in medieval, the art of Renaissance showed flowering of delicate and detailed lines trying to rescue the inspiration left by ancient Greek and Roman culture from the antiquity. God, or rather the Christian God, left with small steps to be the unique and powerful engine of the universe and doors opened to encourage human curiosity with less fear for the punitive eyes of the church. I point out the desire to design, that the ancients also longed for, in the search for depicting reality in nature and mankind. This was not only shown in the visual arts, but also in the philosophizing of the thinking man focused on humanity (anthropos) unlike the central

focus to be given to God in the Middle Ages. Interestingly, these new influences no longer came by way of the Christian church, but, as suggested by E.H. Gombrich, as part of a conquest of reality.

The first steps of art toward the enlightenment of the Renaissance were given in Italy. And as already mentioned the inspiration was directed into what they called the golden age of their own culture 'the Roman Empire' mirror of Hellenistic art. Thus we can see that the artists or artisans gradually began to represent not only a more real look on their works compared to the Middle Ages, but unlike the ancient Greeks, they evoked a greater dramatism. As we can see in the following example where I show this Greek sculpture called Venus de Milo to the left with her beautiful face of delicate lines. Does she not show perhaps a much colder and lost look compared to 'the David' of Michelangelo from the Renaissance (to right), free from the traits of rigidity?

Figure 12 Left: Venus de Milo 130-100 BC. Right: David (Michelangelo)1501-1504.

Now not only the fear to represent humanity and its physical beauty was dissipating, that fear infused by the church on those who dared making creations more beautiful than God himself, but now artists were trying to communicate a human touch, the touch of sensitivity which is so characterize of the humanity.

Not only with respect to the nature of the human figure, but also with respect to nature in general can we see that the world of art was turning. Floral patterns/motifs spread out in artisanal workshops throughout Europe as well as in Norway. This new experience was freely lived in different ways at different places and cultures with some elements taking root deeply in some cultures, such as carved acanthus or *chinoiserie*.

And so I believe that while we can see rigidity and asymmetry through the geometry in the ornaments of the Hardanger fiddle as in the case of Jaastad-fela and its *muruspjeld*, we might also see that these tense lines which created the ornamentation at an early stage gradually soften to deliver organic motifs, refined and beautiful, arriving into the 1850's. Here I want to emphasize the concepts of 'refined and beautiful', because these are in contrast to the definition of 'visual language' that was characteristic in the oldest instruments, like the *muruspjeld*. 'Refined' and 'beautiful' suggest the pure function of giving a visual delight.

As explained before such events that led to modifications in these instruments could not have been developed through a short process, but gradually over the years. And independent of which items reflecting more natural and real characteristics were introduced, these could share space with those we recognize as geometric elements in one specific instrument. Thus we have an interaction between symmetry and asymmetry on behalf of balance.

In the following examples I do not see necessarily worse or better skill in the arts of craftsmanship, nor a greater or less complexity of these compositions and nor more or less dedication to the crafted elements. Rather, I see a different way to see and express motifs. I refer to different ideals - either what we call art or what we call visual language.

And as expressed by the sculpture of David by Michelangelo, I believe that the motifs on Hardanger fiddles approaching the 1850's were aimed primarily with a more connotative than a denotative function. Then the Renaissance influences reflected in these later works ask us to see their beautiful details or their graceful lines guided by organic movements. The elements served as a way to bring the observer closer to a natural environment. No longer a static, but a dynamic composition guided by the symmetry of the elements. These elements demonstrate a symmetry searching for beauty, a way to embellish these musical instruments, and therefore a tendency for more 'decorative' function.

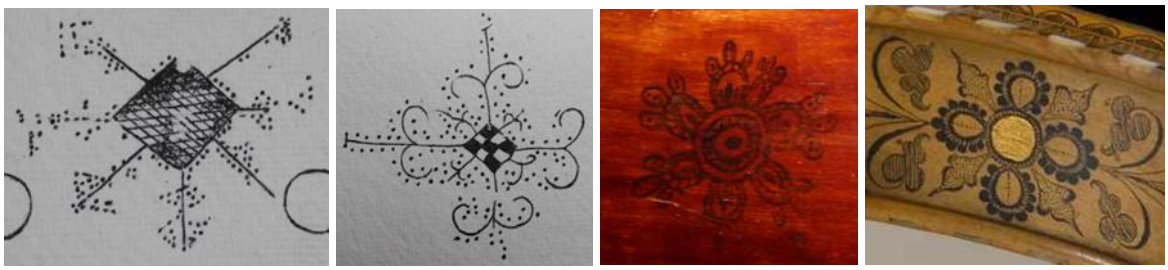

Figure 13-16: 1651, 1720, 1799, 1862

« Erik Johnsen Helland (1816 – 1868) fra Bø i Telemark er ofte kalt den moderne hardingfelas far, og et stort antall felemakerne som etterfulgte ham, tok

utgangspunkt i hans hardingfelemodell og feledekor… løvehode, korpusdekor basert på akantusranken, og gripebrett og strengeholder som var utsmykket gjennom en kombinasjon av horn, mørkt og hardt tre samt innlagt perlemor, organisert i repeterende felt bestående av firebladsroser. Helland hadde sin mest aktive periode som felemaker i en tid da nasjonalromantikken blomstret for fullt.» (Aksdal 2009 p.128)

4.3 Conclusion to the historical part

As the historical evidence reveals, I can see that through the years, great and small changes have emerged in the manufacture of Hardanger fiddles. Whether in a technical aspect about the design or performance of this instrument, it certainly has not been isolated from cultural influences through history.

Although the machinery has been introduced to the life of the workshop, the techniques and tools used since ancient times to the present day have not been put aside. While it may be helpful in terms of production, machinery just does not understand the process of feeling the material, which is essential when designing both the form and the acoustic characteristics of whatever the musical instrument is. Therefore the presence of the human factor was and always will be a vital element for the development of this craft.

If I accept the fact that the human factor is essential in these arts, I might also accept that everything expressed by humans including these creations we call Hardanger fiddle, are loaded consciously or unconsciously, obvious or quasi nebulous, with a message or text originating from the ideals of the individual. I understand then that these individuals, although they may be either active or isolated agents in a community, unquestionably belong to a particular society and the culture linked to this. Therefore I could say that such message communicated in their creations would also be a part and somehow a mirror of their culture.

The task is then to read the codes reflected from the surface to the depth of these objects. It is in these codes that we are able to understand not only the tracks left by the manual labor, but also from the creative impulse that must have generated them. From the historical context in which they originated, with the myths of their reality decoded, we can to some degree read the aesthetics on Hardanger fiddles until the 1850's as a pilgrimage from a state as ornamental to almost purely decorative. From mainly an asymmetry (optional) exposed in the symbols and compositions of old beliefs towards a symmetry longing for

beauty. A phenomenon guided by globalizing ideological influences of continental Europe, which were adopted it was required through tradition. The artisan adjusted the balance of symmetry and asymmetry to his own convictions or of the contemporary cultural conventions.

5 Aesthetic analysis

This study focuses and builds on a registry of six instruments in which I believe we can recognize the aspects that are meaningful to give development and discussion to the phenomenon I refer as the interaction of symmetry and asymmetry in the ornamentation and decoration of the Hardanger fiddles in the period that has already been stated above.

As a starting point I have relied on the visual material on instruments from the period specified still in existence to date, and to a greater or lesser degree accessible to the general public. It is so that I examined about 70 Hardanger fiddles mainly through photographic material belonging to the websites of the Digital Museum of Norway, Hardingfele Project and historical studies concerning ornamentation (of private nature).

I believe it is important to note that I have chosen the path of visual material, because this satisfies the need to identify and observe the aesthetic elements that speak of punctuation, lines, volume, outline and structure, which I believe are essential to understand the phenomena of symmetry and asymmetry with respect to the aesthetics of the objects studied. For these elements I do not think it is essential to have had access to the direct sources, as if I had been in search of aesthetical elements such as texture, and / or color.

The categorization which has led me to choose these six instruments as material for this study emerges from the need to limit yet not to exclude the examined material and which has been guided by the following criteria:

- Since the nature of this project focuses on the practical work, the selected visual material may not include all the aesthetic elements exposed.
- Instruments should be representative with regard to the concepts of ornamentation and decoration, and / or asymmetry and symmetry in interaction.
- Considering the timeline imposed by the study of approximately three hundred years, and events occurred in this period, which could have or may have had a significant impact on the transcendence of the aesthetic and design of these instruments.
- Considering that the instrument was not limited to one geographical area, but spread successfully in various cultural centers in Norway. For this, representative objects in relation to geographical area need to be collected.
- State and clarity of detail of the visual material.

I did consider it necessary to expose a more accurate picture of what I call asymmetry or symmetry in the compositions the creation of new visual material. In this specific case I will make use of drawings that correspond, in some degree, to a real copy of the compositions in these Hardanger fiddles. The drawings allow for isolating the elements to observe them, free from factors that can be considered as disturbing, as for example what are the contrasts of light and dark, or the color spectrum.

I also feel necessary to divide these compositions into three groups, aiming for clarity and simplicity for comparative analysis. I do note and understand that since techniques for ornamentation and / or decoration shared identical nature within some parts of these objects, it is natural to divide these instruments considering this character in: body/corpus, fingerboard and headstock/pegbox.

5.1 Corpus

I will start observing the body of this instrument called Jaastad-fela, and here I suggest making a division between front and sides. If we focus primarily on its top or front we will see that exposed, which in spite of wear to the instrument over the years degrading the detail, can be distinguish without difficulty motifs that might be called as main or secondary.

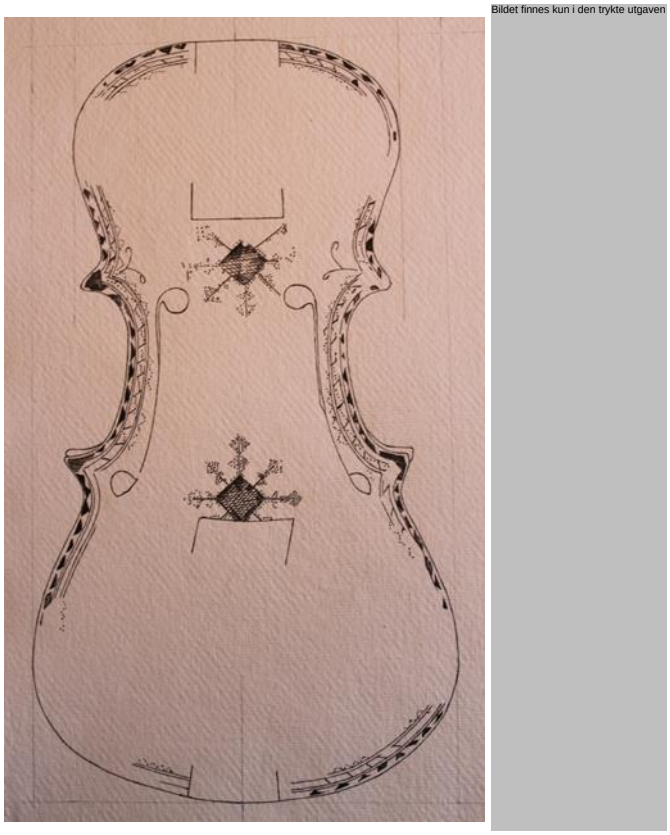

Figure 17-18 Ole Jonsen Jaastad Fiddle, Jaastad-fela 1651. Left: Drawing. Rigth: Photo Hardingfeleprosjektet

I refer to these two ornaments, which we know are named as *Muruspjeld* and that have taken the particular form, in this case, of what appears to be like a net in the center of a flower.

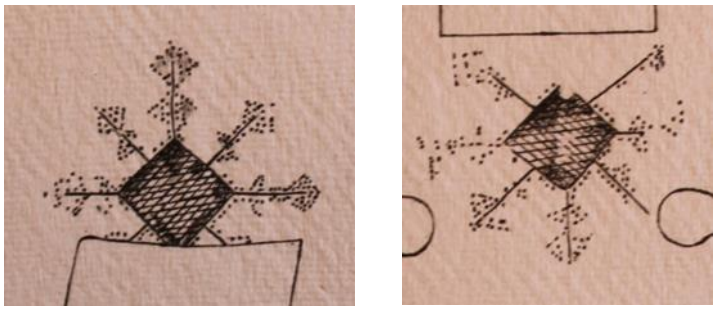

Figure 19-20 Jaastad-fela's Muruspjeld

I understand that while it is clear that the motifs are not presented as complete as in its original condition, the essential use of geometric shapes is distinguishable. And while observing the accuracy of the lines I see here the deliberate use of the square and diagonal lines that create this kind of fishing net, representing the *Muruspjeld*. I also note that these two motifs, consciously or unconsciously, have been placed along the vertical center of

this instrument top. This gives a sense of searching for dominance in the center of the plane; the size of these two elements compared to the rest of the elements in the front or top, also make evident their role as the main motif.

Looking at the borders if we visualize this instrument in its original state, we have lines and triangles that repeatedly cover the entire contour of the top. Crowning two elements in a 'Y' form at the upper corners of the body.

Figure 21 Jaastad fela's border detail

Despite how difficult it can be to use techniques such as a primitive form of pyrography or inking, considering the growth rings in woods like pine, I can see millimetric accuracy in the separation between lines in these edges.

I insist on suggesting, that both the two elements in the middle of the body and the borders should be observed together. Even though these borders may had some kind of meaning beyond an aesthetic value they suggest a way of purely emphasizing the role of the elements in the center of the top, and therefore a particular form of decoration.

Now looking at the sides it is possible to see clearly the abundance of elements covering the entire plane. Here, geometric shapes create a sort of pattern with regard to the movement and structure of the design, yet I see a kind of asymmetry with respect to the rhythm. Perhaps it is the random location to be given to elements in this plane or the unpredictable repetition of certain elements in some specific locations.

Figure 22 Jaastad-fela's side/ribs

While the excessive abundance of elements in a composition and / or asymmetry in the individual elements can be disturbing to the eye, I feel that this is kept in balance by the rest of the instrument. However, balance does not mean ‘symmetry’ in the aesthetic

characteristics of this object. I personally feel that it is this characteristic which makes it an interesting object to observe.

The next instrument made by Isak Botnen is a particular case, where I consider it is necessary to expose some signs that create uncertainties in the origin of the composition. Something suggests that this object must have had the interference of others then just Isak Botnen for the following reasons. The 'style' shown on the sides does not respond to the nature of the foregoing on the top or front. Although the elements used at the top of this instrument resemble or correspond to those used in other objects within this historical period, the sides show vines or a form for acanthus, which was not common from this period at least where it concerns Hardanger fiddles. Also, of the examined instruments which were made by this luthier, it does not appears that was characteristic of him to do such kind of designs. Regardless of whether this is not sufficient reason to assert that this composition has not the authorship of Isak Botnen, I consider it important to present this evidence. Not only the difference in styles, but also in the performance and nature of the techniques used, create a sense of not belonging when I look at both sides and top together.

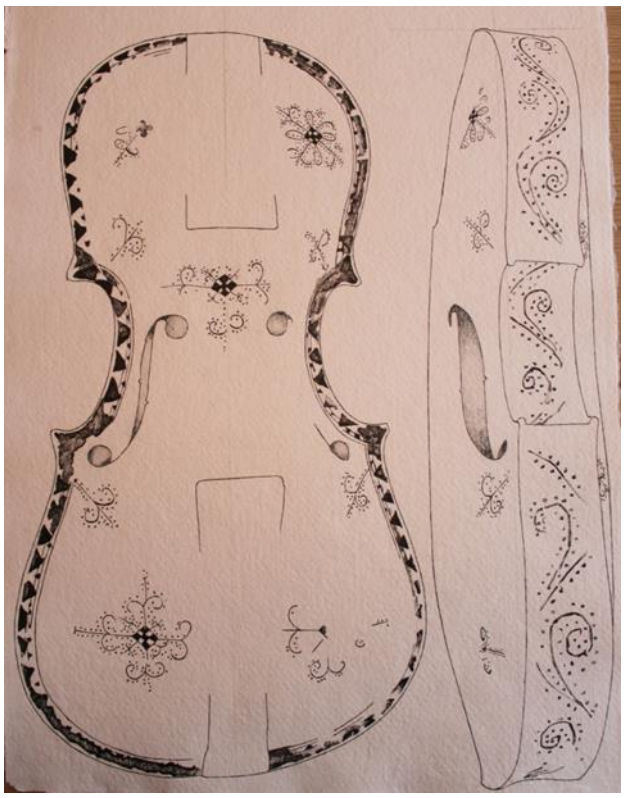

Figure 23 Isak N. Skaar/Botnen Hardanger Fiddle 1720(?)

Independent of the above, I can see that the top shares many of the characteristics in terms of structure of the composition with Jaastad-fela. We have the borders covering the whole

contour of the instrument with triangles and lines, and crowning the corners what I call a 'Y' above are now presented with a greater similarity to some kind of branch or spear.

Figure 24 Isak Botnen's Hardanger fiddle border detail

I can also identify here the existence of ‘main motifs’, these also having a resemblance to those described from Jaastad-fela. Again we have a flower-shaped structure, similar in size relative to the worked surface. The centralized location of these motifs in specific locations enhances their importance. Although these main ornaments demonstrate more organic lines then Jaastad-fela it is still possible to observe a certain rigidity that comes from geometric shapes which consist of a chessboard pattern representing what it has been previously called *Muruspjeld*.

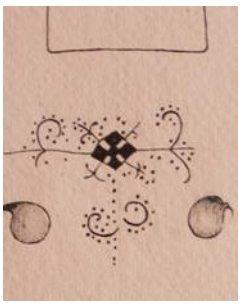

Figure 25 Isak Botnen's Muruspjeld

As formulated above, I suggest that the sides of this instrument do not correspond, but rather belong to a later period then the rest of the other elements used. Even though I can see that the lines used here are rather clumsy, the motif shows great fluency, using all the space that available. Such freedom of movement does not characteristic of the folk-art from Norway in this period, but rather more commonly rigidity as we can see in the following photo of a tailpiece (left), corresponding to another instrument of Isak Botnen.

Figure 26-27 Isak Botnen, Tailpiece 1692 and fiddle Side/Rib 1720(?)

Next is the format presented in a large majority of the instruments in the western part of the country. While certain aspects vary depending on the luthier, starting with Botnen family tradition, here we encounter the case in which the instrument presents little or no ornamental/decorative elements in comparison with those Hardanger fiddles that have similarity to Jaastad-fela.

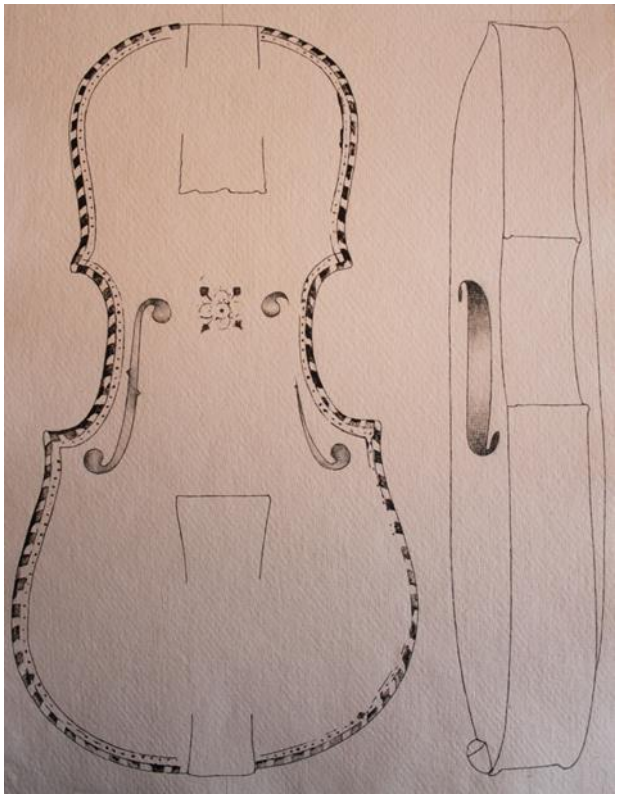

Figure 28 Trond I. Botnen/Flatabø Hardanger Fiddle 1756

This composition somehow still exhibits certain features that can be recognized from those older Hardanger fiddles. I refer here to a central motif or shape and a border that accentuates the role of this.

This element is more unequal size compared to those main motifs in the instruments we have seen before. It is also migrating toward the center or towards a central position in this composition. While this element is small compared with the plane, it maintains the function of the main element. We might note that this is an element that meets more natural or real characteristics. Now I no longer suggest but I understand and see this element as a flower, and as such, carries the name of *midtrosen* or central rose.

Figure 29 Midtrosen

The borders also show more modest abundance of elements like this little rose. The sequences of small triangles are replaced with the geometric element that we call rhomboid. It is this new element which will be used with increasing popularity in the borders of the manufactured Hardanger fiddles in Telemark, and which will show a great grace being inlaid with mother of pearl. Although the borders do not show the clarity that may have exhibited in their original state they demonstrate greater rigor in the order that moves through the contour. We might also notice here that the artisan has intended to make a mirror effect with the rhomboids if we consider the vertical division of the top on this instrument. We meet here a little search for symmetry.

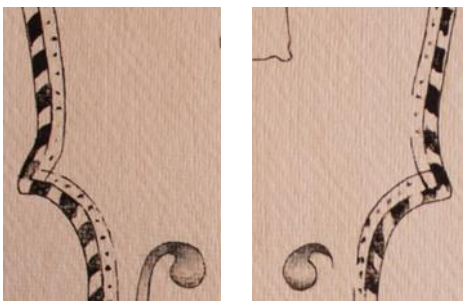

Figure 30 Trond Botnen's Fiddle Borders

Now in the next instrument, a Hardanger fiddle made by Carl Rue, we can see the massive introduction of the Renaissance, which can be identified by the generous use of floral

elements for this design. While such elements still retain certain characteristics of rigidity with regard to motion, we might recognize an increased use of more organic shapes and a greater order in the geometrical arrangements.

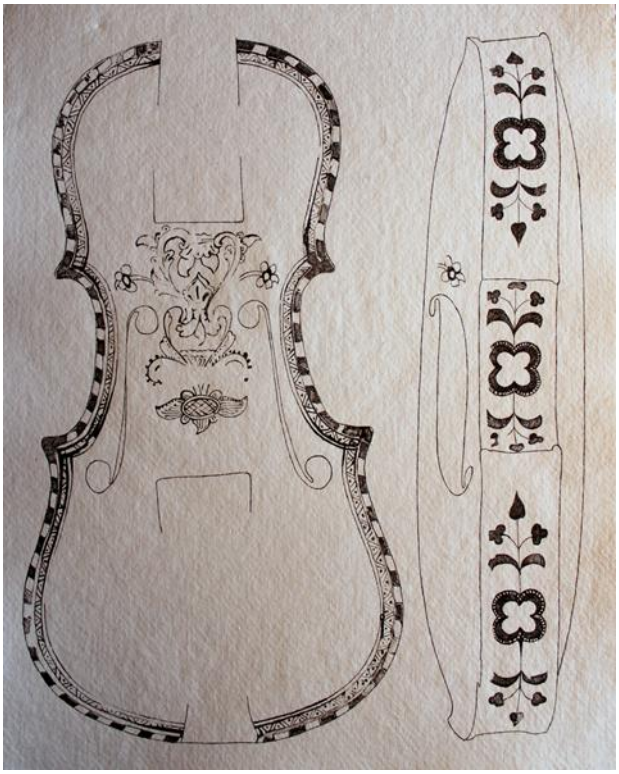

Figure 31 Carl M. Rue Hardanger Fiddle 1793

As I mentioned before, one of the original characteristics since Jaastad-fela that could be considered as transmitted as a part of the structure in the design of these compositions is the location of motifs. And although we may recognize the existence of a main motif in the center of the top in this instrument of Rue, it is not perceived as having the same strong presence as in those older instruments. I think the reason for this could be the use of more organic lines that do not produce a stress or a break with the contours of the body in this instrument. Perhaps the sensation given is that the aesthetic elements are not intended to exist on their own but rather to be part of the instrument in their eagerness to embellish.

While we can see a hint of imperfection in the lines of these motifs, I recognize the care imposed by the craftsman in his desire to create symmetry through the use of mirror images. We can see this clearly if we divide vertically in half this main motif, the reproduction of the same elements on both sides.

Figure 32 Carl M Rue's Floral Motif

Although as we might see a hint of imperfection in the floral motif in the center of the plane, I note that now there is a clear intention and order in the elements used on the borders. The composition is not only driven by the idea of 'taking' all possible space, but the idea of creating a pattern and the need to expose this pattern through symmetry.

With regard to the sides in this instrument we can see what we have earlier called a lesser mobility of the motifs. Now, we can recognize a clear predetermination of where elements are to be placed on the plane. The craftsman has divided a segment for each motif pointing to a greater awareness of the existence of a composition for the instrument.

In the next picture we face an excellent example where the total influence imposed by the artistic trends of the Renaissance is demonstrated. This instrument made by Ellef J. Steintjønndalen expresses a rich spectrum of a fertile diversity of floral elements, and. Despite this abundance it has demonstrated a complete harmony between the elements in the front and sides.

Figure 33 Ellef J. Steintjønndalen Hardanger Fiddle 1862

In earlier instruments we have observed elements using the space in the center of the plane for motifs which were very dominant. These central elements no longer insinuate such function, but suggest equal values with respect to the borders and sides. This lack of dominance points directly to a focus that is not directed to specific elements, but rather a dedication of the composition as a whole. This concern for the composition is a clear manifestation of the existence of a greater need for the elements to create 'aesthetic sensations' rather than 'symbolic signs', which is a characteristic idea in the works of the artisans and artists from the Renaissance.

Somehow the need of the artisan to create aesthetic beauty becomes more apparent, which can be translated from this composition through the deliberate use of 'symmetry'. Symmetry can be found in the use of mirror images, size /volume of elements, organic lines and organization of elements.

In the following Hardanger fiddle manufactured by Nils Belgum from Valdres we see not more than a few lines accentuating the outline of this instrument as a way to decorate. Although it cannot be said that this modality scarcity in aesthetical elements is a fully representative way to decorate, such a lack of decoration in this type of instrument in Valdres is common.

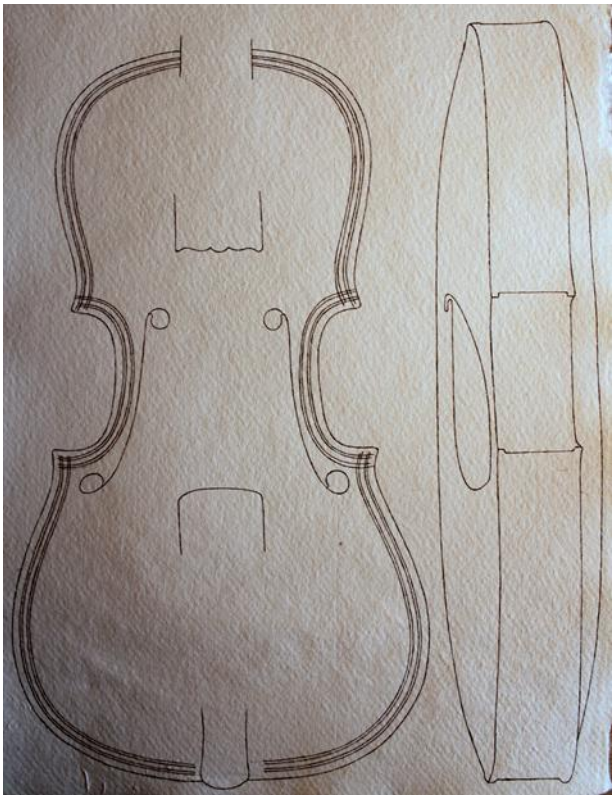

Figure 34 Nils T.Øydgarden/Belgum Hardanger Fiddle (undated)

These lines accentuating the contour connect us with the format that we can find in a common violin. And such lines, I believe, might be understood as an almost undeniable use of pure embellishment and not as symbolic signs. Regardless, these elements are not what I think is most interesting of these Hardanger fiddles from Valdres. That comes in what it can be seen in the fingerboards and headstocks and which we will discuss in the next segment.

5.2 Fingerboard and tailpiece

By isolating fingerboards and tailpieces from other ornamented or decorated parts of Hardanger fiddles, notwithstanding that these belong to an instrument with body and headstock, we are able to see what I mean when I suggest that these are a composition by themselves, both with regard to technique and design.

In the following image one can observe the fingerboard and tailpiece belonging to Jaastad-fela, which I believe, does not need the rest of the instrument to function and exist both as symbolic signs or decorative embellishment.

We can clearly observe the presence of a pattern constructed through the supremacy of geometric shapes, in this case dominated by squares. Although the presence of such forms usually delivers a stiffness characteristic to the composition, this has been broken due to some deformity of the lines and the location of some elements.

This asymmetry, I would say, is not considered disturbing in this instrument. I recognize it as a visual element that captivates the viewer along with the complexity of the design.

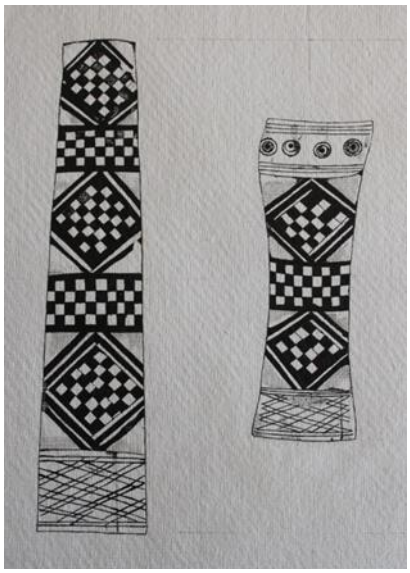

Figure 35 Ole J. Jastaad Fingerboard and Tailpiece 1651

The next fingerboard and tailpiece correspond to the Hardanger fiddle made by Isak Botnen presented earlier, is a little different from the previous example. Although still exhibiting an absolute domination of geometric shapes we see the introduction of the circle as opposed to squares and triangles formed by straight lines.

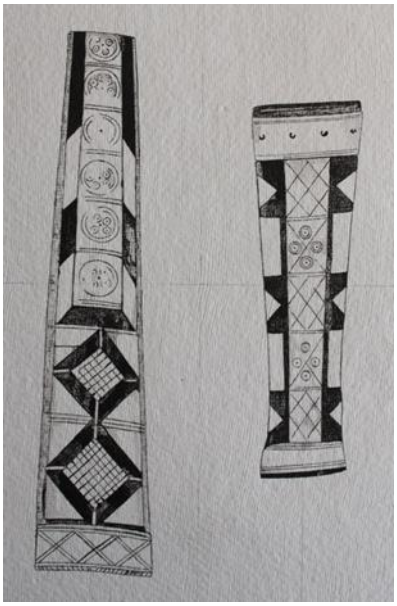

Figure 36 Isak N. Skaar/Botnen Fingerboard and Tailpiece 1720(?)

I perceive something slightly disturbing about the structure of this composition. Although we have two parts (fingerboard and tailpiece) there is something that seems to be recognized as a third piece. I refer to the particularity of the fingerboard which appears to have been built in two different segments. Although this could be presumed as a kind of repair I find it more likely to have been the original intention, this, looking at the unchanged form in which the elements are framed within the fingerboard and the intentional joint where the two segments encounter. The interesting thing lies in the intention of these compositions. Although the work shows great finesse in the craftsmanship performed to achieve these geometric shapes it is not perceived an intention to design a composition, but conveys the feeling of experimentation. Strangely, these parts belong to the body of a Hardanger fiddle we've seen before, and which I describe as inconsistent in the styles used on the front and sides thereof.

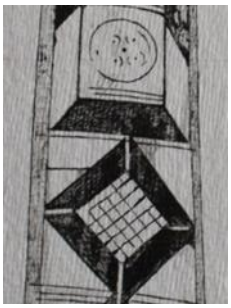

Figure 37 Isak Botnen's Fingerboard Detail

Now if we advance a little in time and recall the prudence expressed by the elements exposed in the body of Trond Botnen Hardanger fiddles, we can also observe moderation in its fingerboard and tailpiece. This composition is no longer simply geometric shapes, rather well defined, straight lines covering the surface. While we might see continuity in these two pieces together, I do not think that these exist or operate on their own, but rather need and belong to a much larger composition which will be the entire instrument.

We might also identify a clear pattern and symmetry in its lines, a calculated design (so to speak), which does not disturb the rest of the instrument. Somehow, these two pieces are an incomplete composition without the rest of the instrument and, considering their relative volume, perhaps the intention was less decorative and more toward abstract expression.

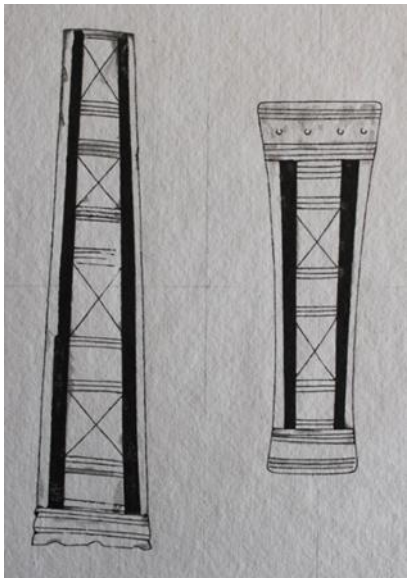

Figure 38 Trond I. Botnen/Flatabø Fingerboard and Tailpiece 1756

Carl Rue's work gives us an example of how even at the beginning of the 1800's luthiers were already in process of introducing elements with greater natural and real characteristics, while the geometry of ornaments as *Muruspjeld* and others persist. Some of them, I might say, comparable or similar to floral elements but with less movement, than is demonstrated in the floral motifs on the sides of this instrument.

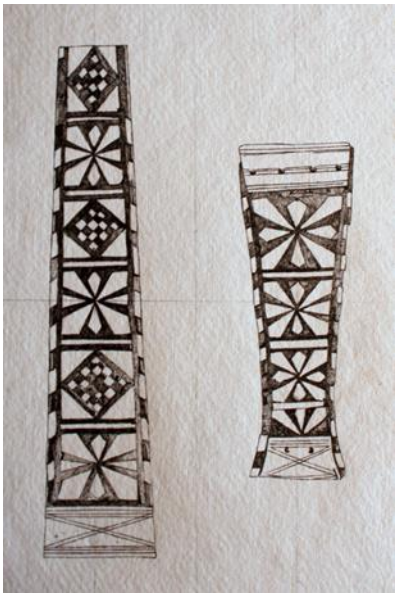

Figure 39 Carl M. Rue Fingerboard and Tailpiece 1793

If we look at the motifs in Carl Rue's fingerboard and tailpiece and compare these with those of Steintjønndalen, we see that while there are some similarities, Rue's elements are more rigid due to either the predominant use of straight lines or coarseness of the work in comparison to Steintjønndalen.

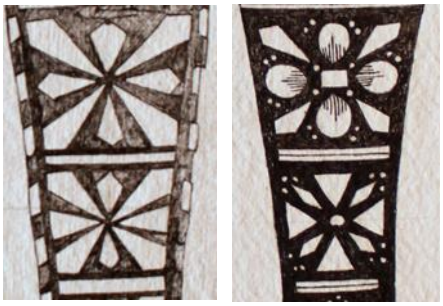

Figure 40 Comparison between Rue and Steintjønndalen Motifs

As I previously mentioned, the work of Ellef J. Steintjønndalen shows clear influences from the art of the period. His floral motifs are more realistic and move away from the ornamental aspect of earlier artisans. I think we can see through the diligence imposed on his work that this craftsman took great care creating symmetrical and balanced lines in his designs.

Figure 41 Ellef J. Steintjønndalen Fingerboard and Tailpiece 1862

It is not only in contours that this artisan has focused his attention and chosen to create a floral structure, but also in the texture of what might be called petals with the intention to deliver more realism.

This composition as well as those discussed above shows a clear pattern. In contrast to the previous cases this artisan follows carefully through the sizes of the elements the curve created by the tailpiece of the instrument. I suggest that the aesthetical elements of the tailpiece and fingerboard as well as those on the body of this instrument are not imposed (as in previous examples), but integrated in the structure of this Hardanger fiddle.

The following image which shows a representative aspect of the fingerboards we can find in the region of Valdres reveals something that clearly disconnects them from those found in other regions. I refer to the use of a second material (bone or antler) on the fingerboard with not a primarily aesthetic but rather a practical function. Such fingerboards, I believe, are shown as a solution to the wear caused by the continued use (performance) of the instrument. I would like then to mark out that the hardness and stability of materials such as bone or antler can technically replace the functional characteristics of typical wood for fingerboards such as ebony.

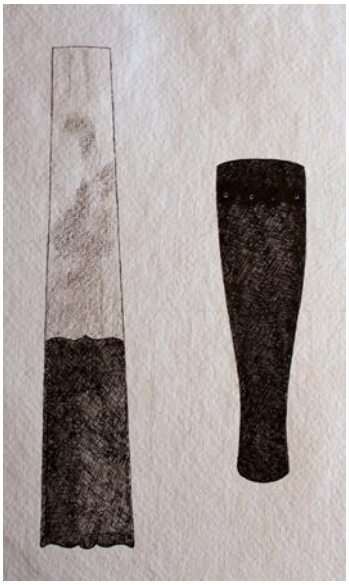

Figure 42 Nils T. Øydgarden/Belgum Fingerboard and Tailpiece (undated)

And while we can see the existence of certain aesthetic details in this fingerboard, I suggest, that is not the fingerboard that wants to enhance the instrument or contribute to a composition, but rather is the fingerboard which wants to be embellished.

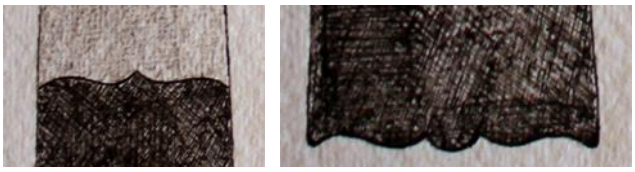

Figure 43 Nils Belgum Fingerboard Details

5.3 Headstock/pegbox

It is in this segment where I consider the origins of most of the questions regarding the manual skills these artisans had for creating. I refer then to the discussion above about the contradiction between appearance and techniques.

Presented in the pegboxes of those early instruments are characteristics that are difficult to define. These have been given names like dragon, lion, woman, scroll or grotesque heads, are only vaguely easily identified as such. We might see this in cases as in the following example where there is no more than a bump of wood that attempts to display a head. What kind of head? That stays to the imagination of the observer.

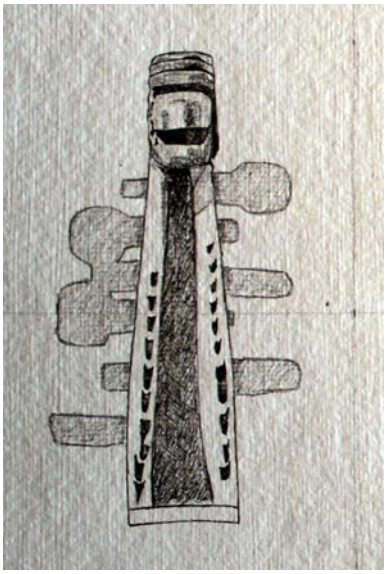

Figure 44 Jaastad-fela Pegbox 1651

The interesting thing about this phenomenon is that, although we know that the artisan who created this instrument called Jaastad-fela had the technical skills to make detailed creations, he carved something unidentifiable and put it in a vital visible place for the observer. This in contrast to common practice today, where many artisans make use of this place on the instrument to show off their skills in the discipline.

Other artisans have chosen to create scrolls as those typically found on violins. We see that this has been the preferred option of Isak Botnen demonstrated in the following example. Unlike the Jaastad-fela, and considering the wear through the years, this demonstrates characteristics delivered by symmetry. We can thus observe that this scroll although simpler than those shown in the violins, is a clear example of how the craftsman modifies and uses what he finds interesting in the surroundings to create her/his own version.

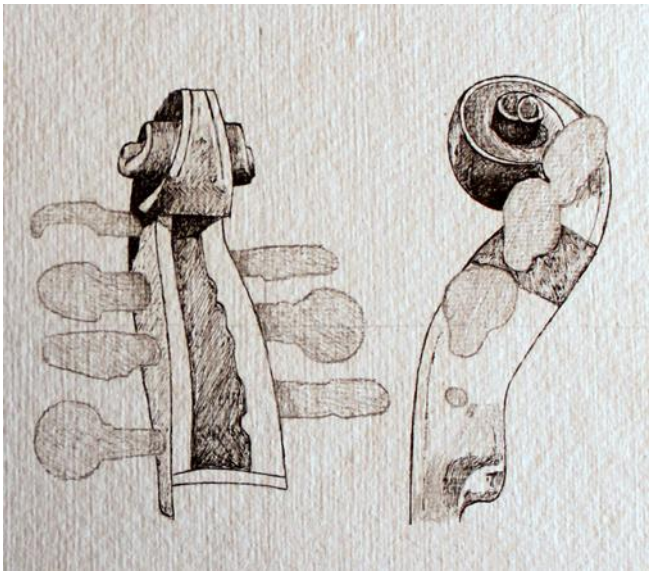

Figure 45 Isak N. Skaar/Botnen Pegbox 1720(?)

With respect to the pegbox of the following images, we see in these a much more defined figure than in Jaastad-fela and which could be identified as what we might say is a lion or dragon head. Even though is not possible to define with full certainty, it is created with some accuracy as an animal.

The artisan uses thick and clumsy lines, flattened faces and undefined proportions, giving the feeling of an -unnatural or non-real thing. However, if the intention was to represent a dragon what would be the real thing anyway? I suggest that the way this figure is represented demands that it must still be observed from the aspects of medieval expression, where no perfection of lines or movement but rather asymmetrical shapes are needed to release a function.

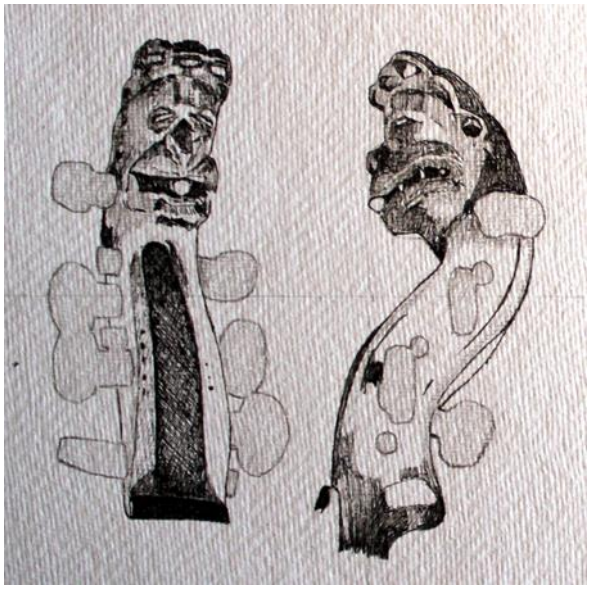

Figure 46 Trond I. Botnen/Flatabø Pegbox 1756

In the work done by Carl Rue we can see the use of what we recognize as the modern way to decorate the headstock in Hardanger fiddles today. Although we observe meticulous craftsmanship in this work, more movement and volume from a crown and more defined structure, I cannot say we see much realism in the result.

It is not with the desire to judge these objects for their realism, but rather with the intention of recognizing certain characteristics of Renaissance art, that I make this observation regarding Rue's headstock. Regardless of this, I think, we see a greater intention to create a romanticized stylization influenced and inspired by the work of pegboxes similar to the one from Trond Botnen, rather than an intention to make a personal representation of either a mythical or real animal.

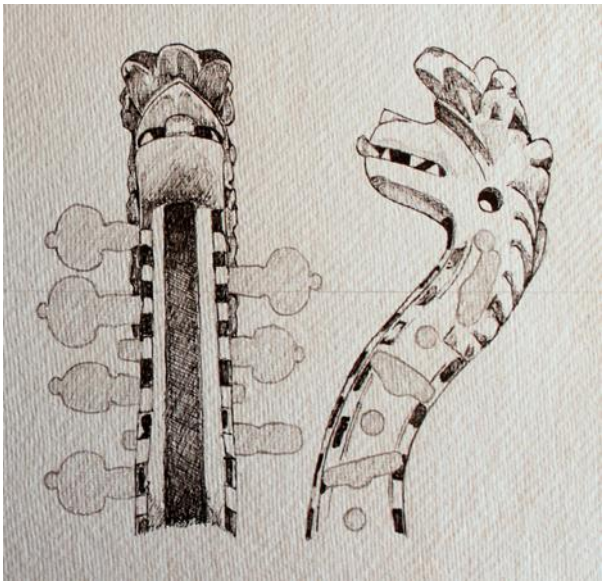

Figure 47 Carl M. Rue Pegbox 1793

I consider that we might also see the same idea expressed from the work of Rue in the following example of Steintjønndalen. However in this and in the rest of this instrument there are countless more decorative details executed with greater delicacy and finesse. Greater simplicity and smoothness is exhibited in face of this animal, leaving most of the details to the ink and not the carving. This is also an example of symmetry. This head is an element of the instrument that persists as a symbol, no longer magical, but rather a representation of the romanticism in Norwegian Renaissance.

Figure 48 Ellef J. Steintjønndalen Pegbox 1862

At last we have the pegbox of Nils T. Øydgarden/Belgum, which also as his fingerboard and tailpiece diverge somehow from the other examples exposed. The pegbox display here is closer in appearance to Jaastad-fela or Trond Botnen's examples. An undefined creature which dominates the plane shared with a modest body, fingerboard and tailpiece.

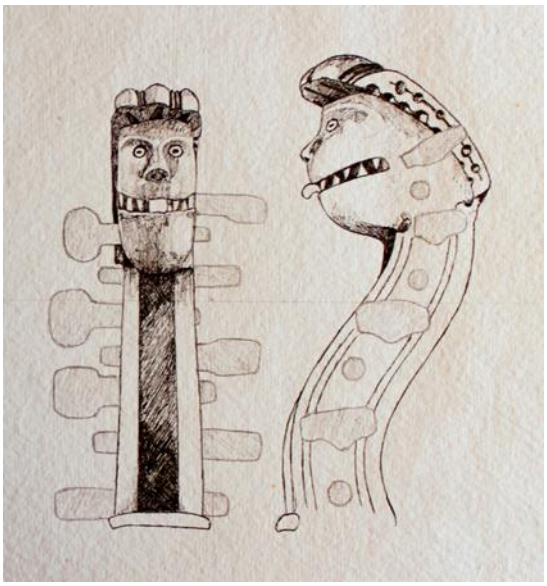

Figure 49 Nils T. Øydgarden/Belgum Pegbox (undated)

5.4 Conclusion to the aesthetic analysis

While we may see through analysis of traditional art objects an evolution in regards to design solutions that have been used throughout history by artisans, we may also recognize certain features that have been maintained. Of those that have been maintained I have identified the arrangement of aesthetic elements, the role given to certain elements, or simply the fact of decorating (at least in one of the segments that have been named here).

When I refer to evolution I do not try to make a reference to an evolution from poverty to an improvement, but rather to the visible changes gradually showing a different way of using the plane to compose, or to put it another way, a manifestation of different styles.

These styles (if we can call it that) are manifested and emphasized, I believe, depending on their greater tendency toward the ornamental or decorative. This can be recognized observing the role that the elements play in the composition. Characteristics such as status, stiffness or softness (movement), and harmony with respect to the instrument have been essential to identify the role the elements play in composition.

I propose that the primary factor which makes these aesthetic characteristics discernible within the different compositions is the interaction between symmetry and asymmetry. We can understand the factor of symmetry as mostly linked to stabilizing or balancing the elements in the composition, thereby neutralizing. On the other hand, asymmetry tends to unbalance and give greater prominence to highlight certain elements. Is this phenomenon and what we call movement (as principals for designing), which I think have greater repercussions in what matter for an embellishment of these objects, determining a lesser or greater decorative nature. These factors are vital to understanding the degree of harmony and balance in the elements with respect to the compositions.

And so I suggest that from the registered objects, we can see in those older instruments a tendency towards the asymmetric that gradually evolves through the years into tendencies involving more symmetry most notably coming to the 1850's. I would like to emphasize the concept of tendencies. We may see a preference for either the symmetrical or asymmetrical, not an absolute domination of one or the other. The interaction between these two design concepts and the decided or intended result of this interaction was guided by the artisan.

Of those design solutions that changed and/or evolved through the years, we should mention the nature of the aesthetic elements, in this case from the geometric to the organic. Also here this evolution should be understood in terms of tendencies. Although geometric and organic are clearly demarcated they did exist together in specific instruments and varied between geographic places as well as individuals. I am not suggesting here that such aesthetic elements originate in certain geographical locations or from specific individuals, but that in certain geographical locations and through history these aesthetic elements were adopted, popularized and transformed through local tradition by artisans.

6 Practical Part

6.1 An idea

One of the first encounters I had with folk-art in Norway was through the Hardanger fiddle both in its music and as an art object. From the first glimpse there grew a fascination for its particular appearance and this was intensified when I got to know the older types of the instrument. It was not particularly the patterns or motifs that were displayed which trapped my fascination, but rather the exhibited cleverness to compose. The instruments displayed an elegant design, not necessarily as art in a gallery, but as an aesthetical solution to satisfy a visual pleasure from everyday life. I say everyday life because the instrument avails itself both of the materials available in the closest environment and, most importantly, the interaction of symmetry and asymmetry to create structure reflecting the aesthetical appreciation of popular culture.

My idea as a woodworker has been trying to achieve these two characteristics, which I have named above, not only in this project, but as principles for design in every project I attempt. With respect to the use of material that is available I refer to not just to the use of local material, but to the use of material that is at hand. I believe this is an important characteristic of traditional arts, not because of environmental or ecological issues, but because this points to the ability to understand the craft and use the materials most effectively in a product.

I recognize, understand, and accept asymmetry not as a failure, but as a tool that might bring life, character, and interest to an object. It is important then to understand that the world of handcrafts is not a world of perfection, but a world where the interaction between symmetry and asymmetry is present in the complete process. And with this I mean that both factors will always be present. Now the difficult part of applying such phenomena is the balance between the two, to apply them sufficiently to create an object that can be alive, interesting and bring the character of the artisan into something visible.

It is for this reason, my fascination for the consciously applied interaction between symmetry and asymmetry that gave a particular character to these instruments, that I have come to the idea of making an instrument inspired both by the motifs and the way of composing exhibited by the Hardanger fiddles before and during the 1850's.

6.1.1 A symmetrical start

One of the main requirements in the developing of a design for my own product was to find decorative or ornamental elements that would not disturb the natural appearance of the material I would use. Therefore, at a very early stage, I opted for more geometric elements as opposed to shapes from nature such as floral elements. That will say that I believe that in the geometric shapes we might find simpler and cleaner features to adopt in the new material. The first step was to find elements to use that could be fused aesthetically to the material. Such a resource I believe I found in those Hardanger fiddles made in the western part of the country.

The stripes shown in these instruments are, in my personal appreciation, a genius feature. It is not an easy task to achieve balance in the play between squares and round shapes, but I believe the artisan here found a great solution to this problem. Thus I adopted this idea, but kept in mind a simplicity with relation to the material.

Another feature I saw as an interesting element to bring to my work from these stripes was the illusion that this gives of dividing the instrument vertically in two, becoming a good resource for exploiting symmetry in a mirror effect.

As an idea of a design was growing from my observations of the historical material, I needed to find an object on which to develop my further work. There was never a question of whether or not I would create a musical instrument, not because of the nature of the studied material, but because of a personal choice and an interest for luthier work. I came to the conclusion that it would be a good option to create a similar scenario or structure to the one we see in a Hardanger fiddle. In spite of this, I chose not to make a Hardanger fiddle because I also like to make something that had a fine practical function. I do not mean that Hardanger fiddles have no practical function, rather that I do not know how to play as build such an instrument, and that this would probably result in poorly made instrument. On the other hand, there was a good alternative option that I knew as a hobbyist guitar player would work. I decided to build an archtop guitar. This guitar is similar in shape and construction to the Hardanger fiddle would do just fine as a bearer of my design.

At this point I had both an object and the start of a design on which I could begin to work. This starting point or primary design, as discussed before, was founded in symmetry and from this I would start my composition of an interaction with asymmetrical elements.

6.1.2 An asymmetrical complement

Playing with the aesthetical elements did not come before I had established a clear defined picture of a design in my mind. I need a little thread as a starting point for every project I go through, like when composing a piece of music one must have usually a little melody from which to start.

With this little thread to start from, I would then turn my eyes to set my first movement towards asymmetry. The first source was hiding in the infinite nuances of wood grain and other features one can find in wood. I knew that if I searched for woods that are not generally considered as tonewoods that there was little chance to find homogeneity or a knot-free surface, so I had the idea to take advantage of this fact. It is important then to clarify that the nature of tonewoods (which are the traditional woods for instrument making) does not reside in acoustical qualities, but mainly in aesthetical aspects. Within this first movement towards asymmetry I also turn my eyes toward what I chose as secondary material, here I refer to moose antler, which has a beautiful marbled aspect. It would then decide that both living materials, wood and antler, would have the main mission to provide life to the surface.

In its essence (as explained above) my design is founded in symmetry. 'Movement' which plays a big role in the phenomena that concern this project, is well defined symmetrically. We have here a guitar body which has a well proportionated organic contour, a symmetrical arching, a straight neck, a headstock and tailpiece which are placed in line with the vertical of the instrument and ‘f’ holes which are proportionally located for acoustic reasons. I did not experiment with the main structure of the guitar because of a personal concern about functionality, but I did need a space to create some asymmetry through movement. I concluded then that a wise place to achieve interaction with asymmetrical elements would be the headstock. This design solution was thought out taking into consideration the fact that some luthiers use this place on the instrument to exhibit their skills as discussed in the aesthetical analysis of this project. The goal of this design is not to exhibit my skills in this way, but rather to use the great importance given by this part in the instrument to highlight the interaction between symmetry asymmetry. While arriving at this solution I also decided to create a stronger symbol that connected the new material with the historic material and found it interesting to allude an inlayed fiddle scroll. I do believe that even though the element I used here is small in comparison to the

volume of the instrument in itself, it creates balance due to the importance of its location on the headstock.

At this point I stop to observe the work I had created at the moment. I observed that I had achieved somehow, as in a musical piece, a melody through the figure spectrum of the material and a kind of rhythm through repetition of symmetrical lines and asymmetrical variation. I also think that both unevenness in the wood and symmetrical arching harmonize as two different pitches in a tune. But there was a missing ingredient, because, while the work was getting balanced, in my opinion, it was also kind of monotonous. I determined that such monotony may have been perhaps the result of the prudency applied in the simplicity of the non-natural shapes. I needed one or a few elements to break this state and create sufficient conflict in the design to make it interesting to the eye.

In the next phase I would look once more to the material studied, and I would here take up an aesthetical element which I suppressed in my aesthetical analysis, color. I did not study color because I feel it does not impact importantly in the phenomenon I refer to, at least in this particular case. And I did not appeal to this element to contribute this phenomenon in my design either, but rather for the specific task of creating contrast. I then chose black and white as two colors on a constant fight when being combined, two colors that might give me as a tool the possibility to create stress in my design. I segmented the instrument to distribute some motifs (which I believe would maintain a balance). The idea was to just barely retouch the composed panorama. I invoke (metaphorically speaking) a *Muruspjeld* for the headstock, the central pattern in black and white in the heel, black ‘f’ holes and a sun symbol for the endpin. I hoped these choices would create the magical formula I was searching for.

Now that I had determined what I believed were the characteristics I expected from my work, I needed a way to give a good ending to my composition. I knew from work on previous projects that shellac is a way of giving a finish to musical instruments and that this would be the right option to go for. Shellac, which is the main material for creating what is called French polishing, can give a powerful gloss and a sharp surface showing the figure on wood, but can also be used just as a sealer. Now all the colors and motifs hiding in the un-sanded surfaces would come to life.

6.2 The material: recognition, availability, selection

The selection of the material was a straightforward process and an easy decision. I knew from the very start that I would not have access to or that it would be very difficult to find traditional woods for instrument making in the surroundings. The simple option was to find alternative materials which had the same or similar functional characteristics to those we normally call tonewoods, and of course, woods that would achieve the aesthetical aspects I required. I believe based on the works of Robert Benedetto and other luthiers, that all kind of woods more or less have acoustical qualities. The secret lies in not searching for what its considered the best wood, but rather finding the best way to get those qualities out from the wood available.

I also took into consideration what the historical material tells us about the use of woods for making instrument in Norway. Only then did I turn my eyes to search for a top and back for the guitar. I picked then from the stores of the establishment where I study some birch which would replace the hardness of a wood as maple; this material would provide interesting figure, combining heart and sapwood in a state of improper drying. I also chose pine which could replace the flexibility and lightness of spruce for a guitar top (if it did not have too much resin).

For the stripe pattern I picked some walnut and flamed birch from the pile of wood I have from earlier projects. Walnut is similar to mahogany and a responsive material for the back. I also made the same choice for the neck, both to keep the central pattern and since walnut and birch are stable woods especially since they were laminated for this project.

I tried willow for the tail and neck block, as well as for the linings. Willow is a wood widely used in instrument making in Norway and in other countries for its lightness, elasticity and malleability, which makes it a good choice for keeping down the weight and adding support to critical points in the instrument.

I also picked from the pile of wood at home oak for the fingerboard, tailpiece, and headstock. This choice was made primarily because I was lacking walnut. This was not a problem, since oak achieves the hardness required for a fingerboard and its color matches to some degree the brown of walnut. This turned out to be a great plan, showing a fine effect of degradation of browns.

For the inlay of the fingerboard, tailpiece, headstock, string nut, knobs replacement of the tuning machines and endpin, I chose moose antler which is a hard and stable material if

one keeps away from the trabecular bone (which is the porous part in the center). This material was also available from earlier projects.

Finally, for the bridge of the guitar I used some birch driftwood picked on the shore of Totak. Such woods that are thrown out from the water before rotting are very stable and hardened by being washed from resins and somehow compressed by minerals. For holding the tailpiece I used a cello strops, stainless steel fret-wire for the fretting, and for the finishing light blonde shellac.

6.3 The tools and techniques

I used hand tools in 90 % (if not more) of the process, which were mostly those we could find in a tool chest of a woodworker before the machine directed workshops. The rest of the process was done with machinery in an early stage, where the material had to be sawn and planed to rough dimensions using a band saw, a belt sander, a jointer and thickness planer. I also used a drill for more accuracy, for example in the squareness of the holes for the tuners.

The selection of tools was determined by an inevitable need for using specific hand planes for arching, rasps and files for molding and other specific hand tools for accurate work. As discussed before, the making of an instrument has to do mainly with the use of the senses for guidance and can not be achieved through the fast productivity of machinery, but relies on more precise and controllable function of the hand tools.

I now exhibit the tool chest of the woodworker, divided into common tools for cutting, planing, measuring, marking, shaping and joinery.

Figure 50 Hand Tools

And I also show some specialized tools for inlaying, carving, measuring and fretting:

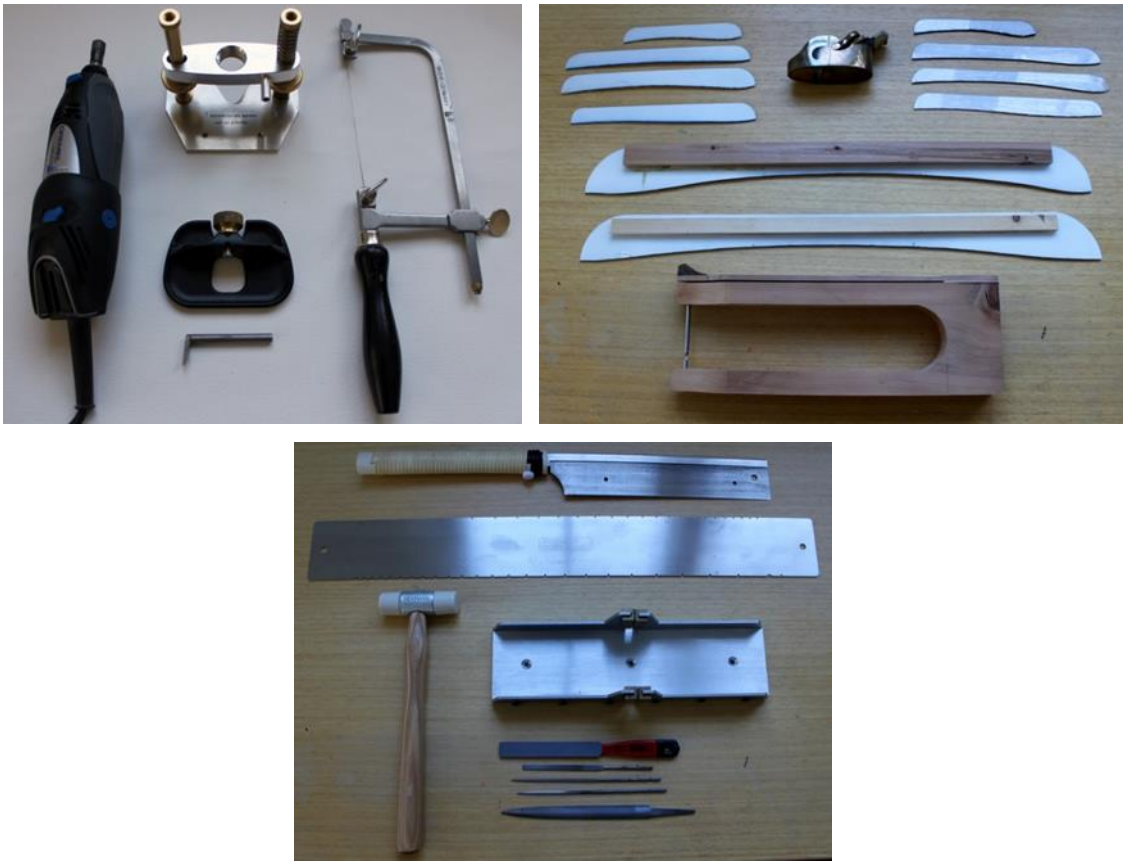

Figure 51 Specialized Tools

As for the working station, I had to adapt it to the room available and the nature of the techniques (mostly for the carving process). Since the room did not allow the size of a standard woodworking bench I opted for two sawhorses that were also used for dimensioning lumber for the project. A good height for sawhorse is around half a meter from the floor, which is not a recommendable height for working, other than sawing, but which might offer a fair working surface for the guitar project. Also belonging to the work station are the cradles that are used for to hold and clamp the guitar body. These follow the shape of the guitar and should be as stable as possible; this stability is given by plywood. It was also necessary for the work station to have good light for tasks like carving and inspection of the work. This was provided by a movable lamp, which gave a fair amount of light and was used with a magnifying glass for analyzing specific procedures.

Figure 52 Work station

In addition to those considered common tasks such as cutting, planing or gluing (which should be common in the craft), I should also mention some specific techniques used in this project. Some of these were familiar to me from previous projects such as the recognition and selection of material, inlaying of bone or antlers, dovetailing, fretting, bracing, bending, and French polishing, and others that were learned during the process of this project like the specific carving of the top and back of the guitar and tap tuning. I would like to explain these techniques in more detail through the process.

6.4 The construction process

6.4.1 Wood selection

If the process starts where the first ideas of a project grows in the mind of an artisan, the practical development starts in the recognition and selection of the material that can be used and the definition of qualities expected for the function of what is being made. For instrument making there is standard but not absolute characteristic of wood that gives good functional results. An understanding of how to recognize and select material is well

documented in this project, even if this is not the primary concern, it is important to discuss it because it tells about a deeper understanding of crafting.

We have for instance the search for lightweight materials, strong and excellent transmitters of sound. One example is the use of quartered and straight-grained pine as a replacement for spruce. The only problem this presents is an excess of resins which mellows the acoustic sound of the instrument. We know through historical evidence that artisans managed to solve this problem, either by getting the resin out of the wood or searching for pine with little to no resin.

I chose to try pine, using quarter sawn, perpendicular grain with around 18 grain lines per inch, almost no resin and 1 inch thick plate for the top of my guitar.

Figure 53 Guitar Top Plate

For the back of their instruments we see that the artisans of the Hardanger fiddles used the knowledge of instrument making choosing strong and stable woods. Good choices for that were maple, birch, willow, alder and others. For the back it has not appeared to be a problem to have used flat sawn and not just quarter sawn material. This is not an uncommon choice since it doesn't seem to affect the sound qualities of the instrument. When choosing material for the back of my guitar I did risk sacrificing some sound qualities in favor of the design, but this has not shown problems with regard to strength or stability. Regarding sound, as stated from the beginning, I give freedom to the wood to sound from its own properties helped by my technical support. The back is glued from five different woods, birch at the sides, walnut at the outline of the central pattern and flamed birch in the center, making a plate also 1 inch in thickness.

Figure 54 Guitar Back Plate

Both the top and back were glued with hide glue, flattened in a thickness planer to a dimension of 1 inch, inscribed with a pattern of a 17’ archtop guitar from Benedetto and band sawn to its current shape.

6.4.2 Carving the top and back plates

After the selection of material, arrangement and gluing of the pieces, and disposition of the model, the next step was to go directly to the carving. The carving was done in the following way. First, I created the outside arch with the assistance of arching fixtures to create a symmetrical arched surface. Next, this surface served as a starting point for creating a pattern in the inside of the top and back. This pattern determined how these plates vibrate and what kind of bracing should be used to help this vibration.

The whole carving process was done in a dark room with the help of a lamp which revealed, when pointed to specific positions in the work, complacent arched lines or imperfections in the surface. This process was also completed with the help of fixtures which, when held against the work, exposed either a perfect joint or light in between wood and fixture indicating a gap that needed to be worked.

Figure 55 Carving the Outside Arch

To remove as much material as possible as quickly as possible, the insides of the plates were drilled with an unspecified number of holes of an unspecified diameter. Such holes were drilled to a determined depth for to create uniform plates.

Figure 56 Carving the Inside Arch

At this point it was important to start the tap tuning. This is done by holding the plate with the tips of the thumb and the middle finger in a specific, neutral node. With the plate close to the ear, one must tap the center to hear the tone that comes from the plate. The idea is to constantly tune in this way while carving to achieve the desired tone.

6.4.3 The ‘f’ holes

When finished with the carving I would find the right position for the f holes. This is determined by the position of the braces on the inside of the top plate and the position of the bridge that will transmit the vibration produced by the strings to the top of the guitar.

Since it is not the shape of the holes but the size and the distance between them that is important for sound quality, I chose a very traditional shape that resembles those we can see commonly on fiddles. The heart of the guitar lies between the f holes which mean that the top will vibrate no further than in between these two holes.

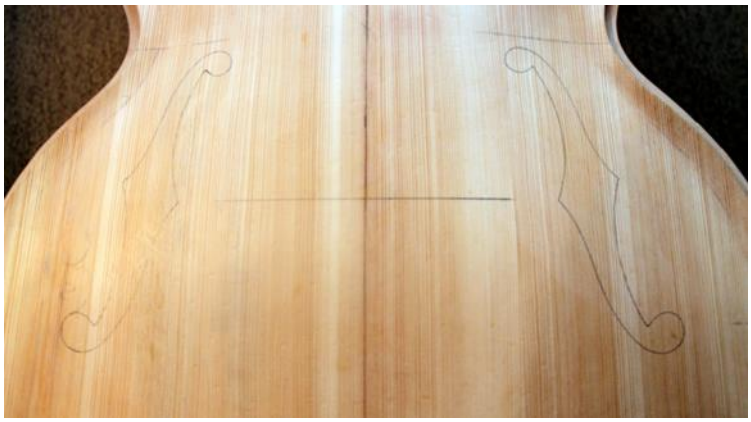

Figure 57 "F" Holes Position in the Top Plate

The main reason for searching a similarity with f holes that we find in fiddles is because it is a good configuration for showing symmetry, just as we see in the analyzed Hardanger fiddles. Looking at these holes from this perspective, this is a positive element that might contribute to the phenomenon in my design.

6.4.4 Bending the sides

For the bending of the sides I did not use the modern method commonly used in instrument making achieved with a bending iron, which is a warmed metal pipe that conducts heat into moistened wood to bend it. Instead I used a more lengthy process which is normally used for bending what in Norwegian is called *sveip*. This process consists of pressing green or moistened wood into a mold to be bent while drying gradually over a long period. I chose this method because it allowed me to work on other parts of the project while the sides where clamped for drying. Instead of using green or just moistened wood, I used very warm water in a PVC pipe for to soak the sides all the way through. The drying process for the 2,5 mm thick sides was brief, taking roughly 1 day. The very warm of the water helped immensely in the bending of the wood. Regardless, both methods do basically the same thing, they help conduct heat through water applied or from the iron to bend the wood.

Figure 58 Bending the Sides

Bending the wood at such sharp angles is commonly achieved with willow wood, which is an extremely malleable material, using the *sveip* process. To see an old Hardanger fiddle with willow sides would not be a surprise, since this wood has been widely used for all kinds of bent portions of instruments in the traditional woodworking context worldwide. However, I chose to use birch for the sides of my guitar because I was trying to match the sides to the back plate, not so much in color but in figure. Even though birch is not as elastic as willow when creating the sharp bends on the sides of this kind of guitar (with a cutaway), these 2,5 mm planks will execute a fine and clean work without cracking or showing signs of such.

6.4.5 Neckblock, tailblock, linings and side braces

On the other hand for the neck and tailblock which are the most important supporting parts between the sides and the back and top plate, I did use willow. Here one must take into consideration that the wood used should be lightweight for sound issues and willow is a good option. These blocks will not just work as a support but accomplish another task as well; the neckblock which is the one in the upper side of the guitar body serves as surface for the dovetail that holds the neck, and the tailblock which bears the endpin which in turn holds the tailpiece together with the strings.

Figure 59 Neckbolck and Tailblock

Willow was also for the linings. This was again chosen out of consideration for sound quality making it important to keep the weight of the instrument as low as possible and, as discuss before, to take advantage of the flexibility of this wood. The linings are the slotted strips that follow the body shape and have no other task than giving greater surface area for gluing. For the side braces, which are those strips perpendicular to the sides, were made in pine; these braces have the main and only task of supporting the thin sides.

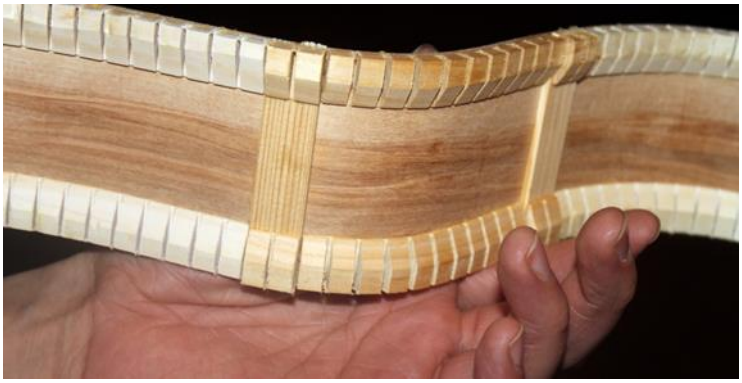

Figure 60 Linings and Side Braces

6.4.6 Gluing the back and top plate to the sides

The gluing of the plates is a straightforward step compared to the carving, but one must be aware that for the two surfaces to join well, no gaps can be allowed. Another issue to consider as well is to put an equal pressure to the whole body when clamping. However, if the joint is a good match, the pressure applied should not be much. The glue I used was Titebond which is a kind of yellow glue for interior wood. This meant that in comparison to the hide glue used to join the planks of the plates I had more time to work in the

clamping. It is important to note here that a guitar is not supposed to be dismantled, like a fiddle, for changing bass bars and the like so there is no need for a glue that can be reversed. Instead the glue needs to be able to create a strong joint. For the clamping of the plates I used the same cradles that were used for the carving. These jigs, as discussed before, must be very straight and strong to provide equal pressure to the whole surface with just a few clamps.

Figure 61 Gluing of the Top and Back Plates

Before gluing I applied a thin shellac layer to the inside of the plates to protect the wood from the unpredictable humidity of the seasons and years. I also signed and named my work before I proceed to glue first the back plate and then top plate.

Figure 62 Naming and Signing the Guitar

6.4.7 The body and neck joint

The technique used for joining the neck to the body was dovetailing. The procedure was no different than a common blind dovetail, first sawing and then paring with chisels for a

good fit. The technique for this mortise (which is the hollow part that will accommodate the dovetail) and dovetail is different from the ones we can find in traditional furniture-making in that this a tapered mortise. This means that the bottom of the mortise, closer to the heel of the guitar is slightly narrower than what we can see in the picture below while the dovetail has the same dimension all the way through (untapered), such arrangement will tighten the neck preventing it for moving inside the mortise. This type of joint will not need much glue to support the string tension.

Figure 63 Neck and Body Joint

6.4.8 Making the neck

The neck was laminated from three planks, two of birch and one walnut. A laminated neck provides greater stability. Luckily, this need for stability fit superbly into my design, giving continuity to the pattern I had established as a main aesthetical element in the back plate. The main point of this pattern was to give the effect of dividing the guitar in two, creating symmetry in the shape of both sides from the pattern. In the neck I played with this element by inverting the color of the woods I used in the back plate. The length of the neck is established based on size of the guitar giving 25" from the nut to the bridge. This allowed me use a standard pattern for setting up the dimensions of the neck. String tension is quite high on guitars with metal strings like this archtop. This issue is commonly solved by adding a truss rod in the neck, making it possible to adjust the neck if it bends for diverse reasons; I used a traditional Gibson truss rod for the guitar.

Figure 64 Neck Truss Rod

The next step in making the neck was to glue the ears to the headstock to create a wider surface to work on. Afterwards I veneered the back and the top of the headstock, choosing walnut for the back, like the back plate, and oak for the front as well as the fingerboard and the tailpiece.

Figure 65 Headstock Ears

Figure 66 Headstock Veneers

6.4.9 Preparing the plates for the inlay

To make plates for the inlay from antlers, I started by cutting rough plates that were sanded to a closer dimension to what was needed for as the end result. Antler is a heavy material and because of this the plates need to be thin, about 1,5 to 2,5 mm, depending on the part of the instrument that is inlaid. As discussed before antlers are a good alternative to woods like ebony. For example, antler is an alternative that will tolerate a lot of wear when used on a fingerboard, and if the right antler is chosen. The difficulty when choosing material resides in frequent improper storage right after they have fallen from the animal or are acquired by hunting. If they lay outdoors, they run the risk of rotting or decaying, potentially from the inside of the antler. This means that the best way of selecting a good antler will be feeling its weight. Another issue that might arise is the width and length of the plates, since it is not the artisan but rather the condition of the material which will determine this, particularly in a large object like a guitar.

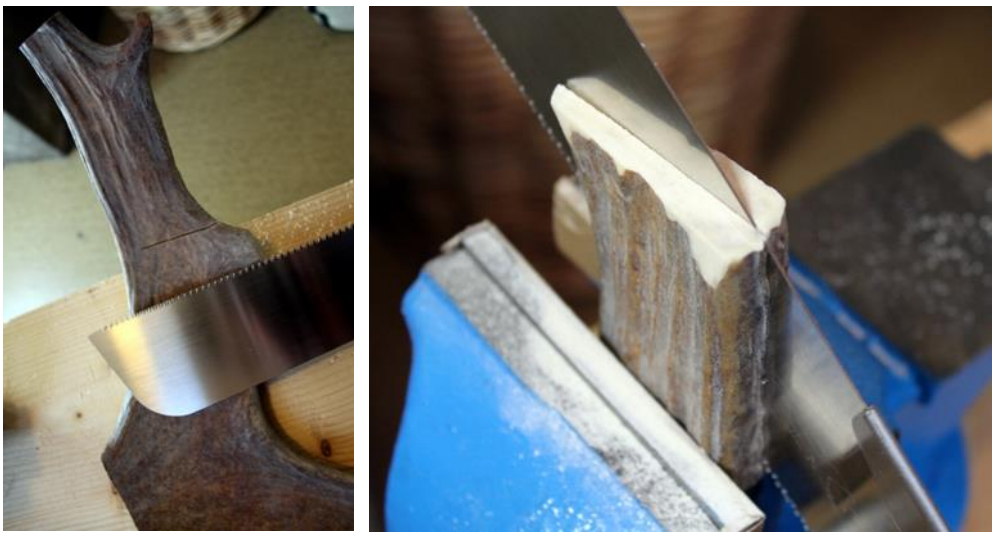

Figure 67 Cutting Antler Plates

The procedure is very straigthforward: selecting, cutting, sanding and selecting once more but now for inlaying. The plates will be oversized when glued and will not get their final dimension until after they are in place. It is then when the inlay will be sanded flush to the inlayed surface and prepared for the finish.

Figure 68 Cutted, Sanded and Selected Antler Plates

6.4.10 The headstock

The inlayed design for the headstock, as discussed before, seeks to symbolize a fiddle scroll. The goal was neither to copy a true scroll nor to create a pure embellishment for the guitar, but rather to create an ornament charged with the meaning of bringing the observer closer to the material studied by this project. Three motivations were used for creating this design: to use a shape or form recognizable from fiddles, to create a shape that was non-rigid and asymmetrical in its structure, and to allow for natural asymmetry by creating a patchwork of inlaid antler plates (as we might see in many of the Hardanger fiddles observed). The asymmetry in the patchwork arose from varied plate joints and grain direction.

Figure 69 Headstock Inlay

The tools for inlaying, if not many, should be of a fine quality since a little mistake will be very visible at the end result. These tools should cut either by routing or sawing as the artisan wants them to, because, even if at the end one can fill up gaps of a couple of milimeters, these flaws can be too difficult to fix. For the headstock I used a dremel for routing out the motif. This little machine allowed me to access very narrow places with little difficulty. For cutting out the motifs in the plates throughout inlaying process, I used a jewelers fret saw which offer a nice and fine cut without too much tearing out. As glue for all the inlaying I opted for an Epoxy-glue which creates a very strong and hard joint, preventing the inlay from moving around as we might allow in other parts of a guitar due to weather changes.

Figure 70 Cutting and Gluing Headstock Antler Plates

6.4.11 The fingerboard and the frets

The fingerboard it is built in two parts, the oak bed where antler plates will be inlayed (using the same method as the headstock) and the inlay. The main difference in between the headstock and the fingerboard is that the fingerboard is designed to be purely symmetrical and to tolerate the wear of playing. As discussed before the design itself is based on and influenced by the symmetrical effect that the Hardanger fiddles from the west part of Norway show in their fingerboard and tailpieces, giving the illusion of dividing the instrument in two symmetrical parts.

Figure 71 Guitar Fingerboard and Trond I. Botnen/Flatabø Fingerboard and Tailpiece

At this part of the design I would take in consideration two issues. First, I tried to maintain the symmetry in the inlay, given by the oak stripes, while allowing the marble color of the antler to exist but working with it to create as little stress as possible in the surface. I controlled this by sorting the grain and making the joints of the plates as invisible as possible. Second, I chose to not add any other aesthetical element than the material in itself; here as in the rest of the guitar allowing the material to have the same or similar importance as the motifs and patterns in the instrument.

Oak if not a common wood for (acoustic) instrument making, due to its visible porosity, worked fine on the fingerboard. Oak covers the main necessities for a fingerboard of stability and hardness, and I assume that the pores will be filled through use by fat from the hands of the player.

As pointed out before the fingerboard corresponds to a scale of 25 inches from nut to bridge and the fret slots will be determined by this.


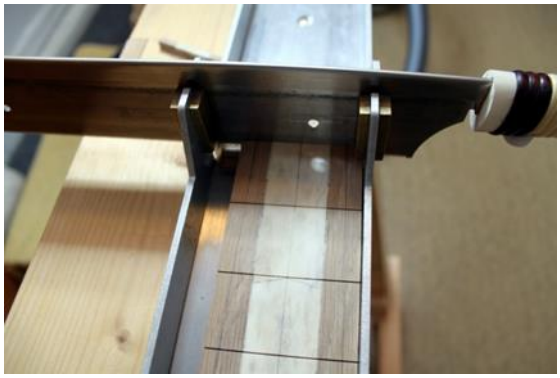

Figure 72 Rotuing for the Neck Inlay and Cutting the Frets Slots

As a traditional feature of the Archtop guitar, this fingerboard will have also a radius of 12 inches tapered all the way through the board. The fret wire I used was Jim Dunlop #6130 fret wire.

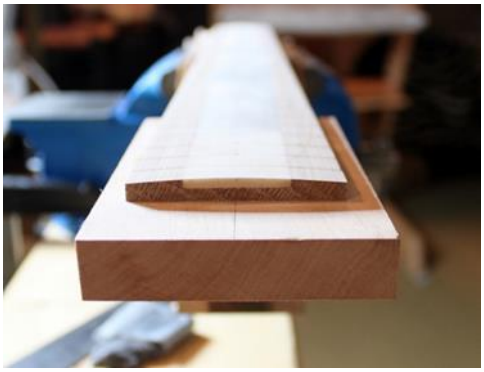


Figure 73 12 Inches Fingerboard Radius and the Fretting

6.4.12 The tailpiece

The tailpiece involved much more design than the headstock since no active wear will be applied to it. This allowed me to play a little more with the inlay and shape of the tailpiece. I realized that since the guitar aims in many ways to reflect a fiddle in appearance, it would be a good option to make a tailpiece that resembles those we find on bowed string instruments in shape. This was also a good alternative since the weight of metal (which was the other option) would present some sound problems on an acoustic instrument.

As explained before, the tailpiece is made of oak and inlayed with antler. The inlay is constructed in the same way as on the headstock with a random position of the plates to create disorder resulting in asymmetry.

The pictures below show the process from preparing a plank for the tailpiece, to sanding the inlayed surface flush to the oak, to shaping the tailpiece which is curved. This procedure is very similar to what I when working the inlay for the fingerboard and the headstock.

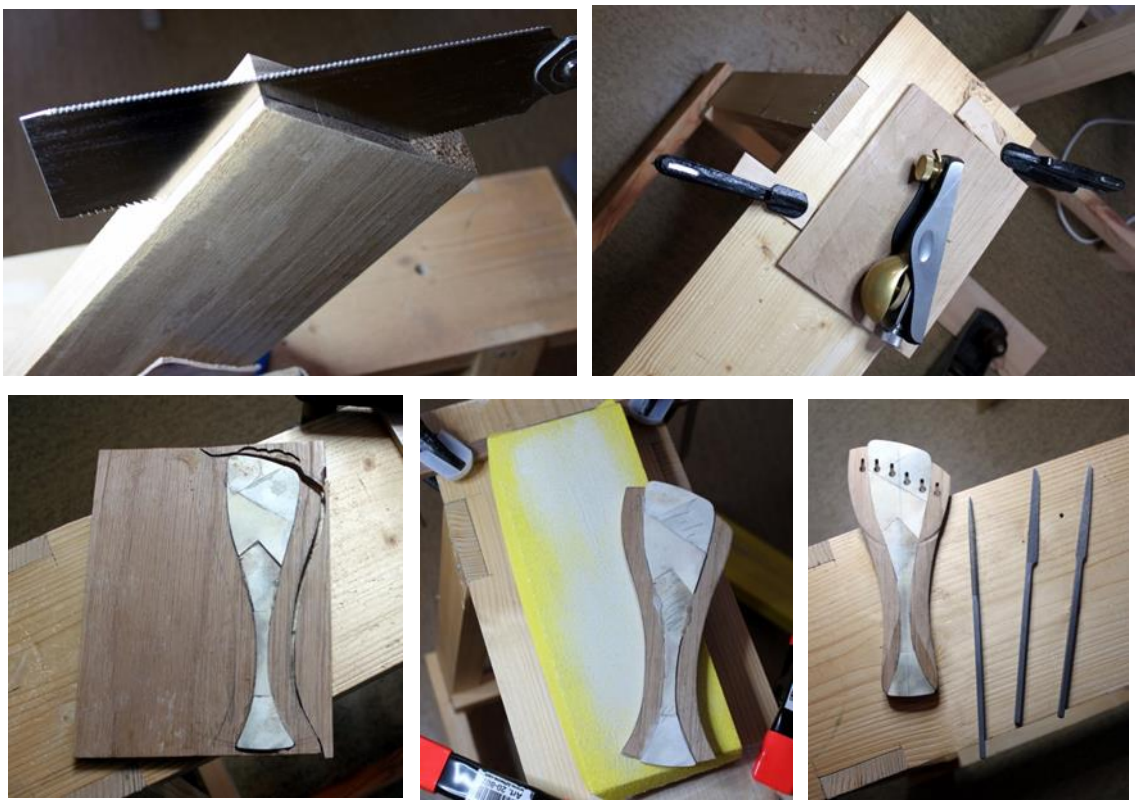

Figure 74 The Guitar Tailpiece

As discussed, the main issues surrounding the tailpiece are only the weight and strength (in acoustic instruments), so the position of holes for the strings or shape has no repercussion in functionality as a musical instruments making this a good spot for playing with aesthetical features (keeping in mind to avoid extreme shapes that can destroy the balance of the tailpiece). The tailpiece for my guitar follows the central pattern I had established for the back, neck and fingerboard. However, her I had the opportunity to accommodate the pattern to the contour of the piece. This feature maintains the function of providing continuity, and also tries to soften the rigidity of the pattern by using curved lines. The tailpiece will be suspended and held by the strings and a cello tail adjuster to the endpin of the guitar which is a solution found in bowed instruments.

6.4.13 Truss rod cover, heel, ‘f’ holes and the endpin

I would describe these non-related parts of the guitar on a single group because, while they have neither function nor construction in common, they share a common component in my design. This shared feature has to do with color (black and white). Here, color is not employed as a component for embellishment or as means of visual language, but as an element for creating an effect. This effect is contrast, seeking to create a slight tension in the design to capture the eye of the observer on some specific points on the plane. These points on the design are mostly focused on the main or central pattern.

The truss rod cover was constructed as a mosaic (assemblage of small pieces) and represents a *Muruspjeld*. This has the task to bring focus to all the elements of the headstock.

Figure 75 Truss Rod Cover

The heel, which is also a mosaic highlights the central pattern in the back of the guitar and accentuates the reversal of woods in this central pattern in the transition from the back plate to the neck.

Figure 76 Guitar Heel

The ‘f’ holes are painted with a matt black on the inside edges. The goal was to make the edges of the holes disappear, searching for more depth by highlighting what happens in the top plate and directing focus to the bridge.

Figure 77 Darkened "F" Holes

The endpin is a antler pin with inked circles. The primary function of this piece is holding the tail adjuster in place, but it has also the carrying the central pattern across the sides to the back and top of the guitar.

Figure 78 Guitar Endpin

6.4.14 Dressing the frets

This procedure which has purely to do with the performance of the instrument has nothing to do with aesthetical matters. Even if the process is pretty much straightforward, the main focus is to level the frets and round their ends, the task in itself is difficult or rather demands great attention. If the frets are not dressed the guitar will buzz due to high spots in the frets. These spots must be removed by sanding and filing.

The complexity of this task lies not the act of sanding but in keeping the 12 inches radius of the fingerboard, considering that variations as small as a millimeter will be noticeable in the performance of the instrument.

6.4.15 Finish

The product I chose for the finish of the guitar was shellac, which is actually a secretion from a tiny insect that infests trees. It is obtained by cutting off tree branches and holding them over a fire until the resin melts and drips off. The shellac is refined in stages and becomes lighter in color and more transparent.

I chose shellac because it is an excellent and friendly sealant for musical instruments and because choosing a blonde shellac (which I did) gives a very transparent and clear finish that embellishes and highlights the properties of the wood.

The method I used for applying the shellac was through the technique called French polishing, which consist of wiping the shellac on with rags in thin layers to build up the finish.

Before applying the French polish the wood surface must be prepared to create a good condition for the shellac. I sanded all surfaces starting with a 60 grit paper gradually going up to 400 grit. This process was applied to the entire guitar except the fingerboard, inlays and fittings which were not be French polished. These were protected with a strong masking tape after sanding.

Figure 79 Sanding for the Finish

Now, the guitar fine enough for pore filling. After applying two layers of shellac, I sanded again until I could see the wood. I then used a clean rag with a mixture of alcohol and pumice, wiping the surfaces repeatedly in circles to fill the open pores of the wood, especially the large pores of the walnut and birch. The pumice works as a very fine abrasive, mixing both wood and shellac into the pores.

After the pore filling the guitar was ready for the French polish. This was applied in the same way as the pumice, wiping in circles repeatedly with a rag. I made the rags from 100 % cotton clothes. The shellac solution was mixed with denatured alcohol with a 1:5 ratio. To control the amount of shellac that was transferred to the surface, pure denatured alcohol was used as a thinner and extra virgin olive oil to make the rag wipe easily. The volume of shellac used was very little; when I needed recharge the rag I only needed a few drops of the solution.

Questions like how much shellac was in the rag or how many layers are needed for the job are difficult to answer since there are no predetermined numbers. A satisfactory result is reached through practice and understanding of the varying proprieties of the materials. Small variations in amounts of shellac or the appearance and effect of the finish are not problems but results that satisfy and accommodate the individual artisan.

The common objective that artisans seek when they opt for a French polish is a mirror shine finish. While I desired a thin finish that could improve the acoustical qualities of the product, which this technique can offer, I chose a mirror shine for the top and back of the guitar, and matte and clear finish for the rest of the instrument.

Figure 80 The Finish

Figure 81 Finished Product

6.5 Conclusion to the practical work

The goal of both the design development and creation process was never to make a copy of the historical procedures or products, but to use the basic principles of symmetry and asymmetry to design a new product.

While it is highly likely, though not certain, that early artisans consciously used symmetry and asymmetry as design principles for creating Hardanger fiddles, these elements are clearly exposed as characteristics of their appearance.

I tried to use these two factors that I recognized as a craftsman in the work of the artisans in question. I believe I have shown that symmetry and asymmetry can be applied as a phenomenon for designing and not just as means of design failure, which requires understanding of both the craft and the nature of the aesthetical elements.

It was then natural to investigate establishing understanding of both the craft and the nature of the aesthetical elements - the rules suggested by 'form follows function'. Understanding the craft is reflected in the need for symmetry to acquire a function of sound production. Understanding the nature of elements is shown with balanced asymmetry and by creating a product that may be interesting in the eye of the observer. This balance was not influenced by the studied objects, which are somehow a mirror of aesthetical demands in their contemporary world, but are an attempt to satisfy my need as an individual craftsman and perhaps the common visual pleasure of today's society.

These phenomena as a principal for designing in handcraft should be taken into consideration, since handcraft is at its essence not a bearer of mechanical perfection, but rather a channel for human expression. Thus understanding these phenomena in theory and practice might enrich whatever idea of design one can imagine.

7 Conclusion

What characterizes most the Hardanger fiddles in early and modern time as objects of art, is its richness in aesthetical arrangements. Through history these arrangements may have become as important on the Hardanger fiddles as its function as musical instrument. This richness provides a widely variety of esthetical elements and design solutions, in which the early type of the instrument exposes a more venturous position in the exploration on designing compositions, in comparison to the modern type. It is this aspect, in my opinion, which establishes the differentiation between the older and the modern instrument, this remarked with the search for a standardized instrument that could symbolize the Norwegian Romanticism. It is thus we have seen the development of the early Hardanger fiddle towards this modern instrument, from an instrument charged with strong religious or magical symbolism to an instrument mirror of the fascination to the nature. What characterize better this development in terms of aesthetics it would be then, the phenomenon of the interaction between symmetry and asymmetry, in which in the play between this two would have given either a more symbolic or a more real representation of the elements and arrangements.

I believe this research has accomplished the main points of understanding the nature and dynamics of the phenomenon as presented, not only with respect to the Hardanger fiddles studied but also in the general production of crafts in the artisan era prior to the industrial revolution. I have attempted to tried to be transmitted this acquired knowledge through the practical work, designing an instrument and providing an option for designing future work. This implies that the knowledge transmitted by these artisans is a living resource of techniques and ways of thinking about design that can be used in contemporary crafts.

Through the historical evidence we showed that artisans were well trained in the art of woodworking and that the aesthetical solutions in their products were consciously planned designs that met their contemporary, aesthetical needs following the historical art trends to some degree.

One of the most important values transmitted by these artisans through this phenomenon is adjusting both the ideas and the practical work to what they themselves and the environment might offer and demand. They absorbed what they saw in continental and other art and made their own interpretation of it. They created objects and elements that were either symbolic or purely for visual pleasure, fearless of what could be called imperfections. They accepted the proprieties of the materials they had at hand and

developed objects to fulfill a function, regardless of appearance. They experimented with shapes and colors, aesthetical arrangements that remain as unique works, and transcended the romanticized copies of present ornaments and decorations. They created freely, unchained from the norms and rules of academia and standardized models.

Throughout this project I gradually grew to accept that proportions are not a matter of numbers, but a result of sensory acknowledgment. It is the eye that determines a color or amount of finish because it is the eye these should please. The ear determines the sound coming from the guitar, because it is for the ears that this instrument will play. And the hand determines how the work will be driven. The human senses guide the work because it is they, and not the machines, that understand visual and sound pleasure.

In the practical work, I understood from the beginning and based on my experience in the field that one must accept the limitations both of the material and the skills of the artisan. I took advantage of this to strain the limits of the material in behalf of the design. Wood knots, excess resin, large pores and others are considered dangerous features of the wood structure when the material is intended for musical instruments. However, this is not a disadvantage if one has enough knowledge of the material one is working with. We might better understand the material and its behavior by observing it in its asymmetrical state with various anomalies as opposed to in a state of stable and homogenous timber. This understanding is vital for the craft, because wood even in its state of timber is a living material that moves with the seasons and reacts to what is applied to it. It is vital because wood is not perfect and a craftsman should know why. Wood figure, color and many other wood features can immensely enrich a design if chosen consciously. A craftsman should not be afraid of experimenting away from the safe side of homogeneity (symmetry), because often it is variety (asymmetry) which can make an object interesting.

8 Bibliography

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