

## Using wool's agency to design and make felted artefacts

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### **Abstract**

This exposition presents an explorative project that examines employing material as a reference point for designing and making an artefact. The material's effects on designing and making have been elaborated upon from many angles. This exposition also examines how material affects designing and making processes from the perspective of material agency. This study argues that by observing a material's behaviour from the perspective of agency, one can genuinely understand what the material does, and accordingly can find ways to collaborate with it in the process of designing and making artefacts. The discussion is articulated through a designer's project in felting by employing a practice-led research approach that examined the decision-making processes through written reflections and visual documentation. This examination suggests that by including material as a reference point, design and making can reflect the ecology of the material in a way that combines human power with the activeness of the material.

### **Introduction**

In March 2017, I started making felt as a part of researching the role of material in making. Having a basic knowledge in felting, the initial aim of practising was to immerse myself into the research by gaining more experience and knowledge about the practice. In a sense, the aim was to become one with the material to understand the practice better (Ingold, 2013; Pallasmaa, 2009). Since then, I have been felting individually and at times together with expert makers (for the discussion about working with expert makers see Aktaş & Mäkelä 2019). Felt is a nonwoven textile that is generated by unifying the flexible and elastic wool fibres, typically collected from sheep (Burkett, 1979: 1). Due to these features, the fibres easily entangle in various forms even without the presence of human force (Figures 1-6). Accordingly, while making felt, the fibres move in various directions until they are fixed and unified with the help of warm water and soap.

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<sup>1</sup> All photographs in this exposition are taken by the author.



Figure 1: Wool in its natural and handmade entanglement. Figure 2: Wool in its industrially made entanglement

When I began as a novice maker, the movements of the fibres were conceived as their responses since the fibres move differently in response to hand movements. These responses by the material were new experiences that encouraged questioning the role of the designer-maker and the material in the practice. This questioning tackled the idea of forcing human designs and manipulating the autogenous forms of wool. Provocatively positioning the material as almost another maker in the process generated the following questions: How does wool exist in its own environment? How is wool transformed after being collected from its environment? How does felt-making occur? What are the roles of the maker and the material during making? Based on these working questions, an overarching question was formulated to examine the ways of thinking with the material while practising:

How can designers immerse themselves within the material and stimulate the characteristics of the material in their processes and artefacts?

I believe that these questions emerged because of my skill stage and experience level in felting. Based on engineering researcher Stuart Dreyfus's (2004: 177) model, when this project began I was a novice performer of felting, due to the limited knowledge and mainly following *rules* rather than instincts. As my making continued and was enriched with observations on the material and expert makers, competency was gained. Dreyfus argues that at the competence skill stage, performers are emotionally involved in their practice and have a perspective that determines behaviours in various situations. According to him, competent performers take responsibility for their successes and failures "... not to analyse one's mistakes and insights but just to let them sink in" (ibid.: 179; see also Dreyfus, et.al., 1986). As performing continuous, one truly understands how the material behaves and the body moves. Accordingly, the performer embodies material knowledge and becomes one with the material and, therefore, becomes an expert performer (Ingold, 2013; Pallasmaa, 2009). This process began emerging through the presented project as well.

Starting from the novice stage and moving towards being competent provided an awareness for the action-reaction loop between the maker and the material. As anthropologist Tim Ingold (2013: 109) argues, when makers develop their skills and grow through their practice their knowledge may become

tacit, preventing explicit analysis. At the early skill stages, since the experiential knowledge is still under construction, makers can act as explorative observers by paying particular attention to details. In the case presented, being competent enabled conscious observation of the material's resistances and the discovery of ways to attune to them. At the beginning of the research, the degree of experience was not yet sufficiently advanced to take the actions intuitively due to the lack of embodied material knowledge. Having limited knowledge, therefore, facilitated the examination of how wool can inform the process of felting.

To understand how material can actively affect the process of felting, this examination was conducted within the frame of material agency. The concept of material agency animates nonhuman entities and argues for their vitalism and responsiveness (Bennett, 2004, 2010). In this thinking, human and nonhumans are coupled together to enable an understanding of the continuous becoming of the world, things, and humans (Barad, 2003; Ingold, 2013; Pickering, 2005). By discussing material agency in relation to felting, this exposition perceives material as a catalyser for the emergence of making, designing and thinking.

Correspondingly, the project first investigates how a maker can develop an ability to think with the material (Ingold, 2013; Nimkulrat, 2010) by observing the transformations in the material while making. Then, the project continues by applying this thinking and shifts the material to being one of the reference points for designing artefacts. This exposition employs my own reflections emerging from hands-on interactions with the material, namely with wool, before and during felting in the design studio and outside the studio in its natural environment both while still part of sheep and before treatment. The self-reflections are captured with notes from the working diary, photographs and videos and then later examined to understand how thinking has developed. In this study, although designing and making are perceived as complementary practices, throughout the text, when mentioned separately, design refers to the pattern generation process and making refers to the process of applying the pattern. The works and reflections presented are only a sequence from the longer process of making, since the project is evolutionary and exploratory with no specific beginning and end.

Next, the discussion will begin with an elaboration of the concept of material agency in relation to my own experience and how it can become a reference point for designing and making. In sequence, as an example, I will present my material engagement in felting in two environments: the design studio and the natural environment. By presenting reflective diary notes and visual documentation of the felting processes, I will discuss one way of designing and making artefacts with the material. Finally, I will utilise the project to discuss how material catalyses making and designing with material.

### **Material Agency as the Catalyst of Making**

Designers usually begin their processes with intentions. However, the result can be different from what was initially planned. As sociologist Andrew Pickering (1993: 564) argues, the material behaves

differently at different times and spaces as a result of its continuing temporal emergence. Therefore, according to Pickering (2005: 179), during making the ideas are re-evaluated in relation to the material qualities and resistances. To attune to the resistances emerging from the material engagement, the initial design may require re-consideration (ibid.).



Figure 3: Wool entanglements after machine roving.



Figure 4: Natural entanglements of uncleaned wool.

The role of the materials has been discussed by scholars over the recent decades, arguing that nonhumans, including materials, can actively affect human experiences, practices, and thinking (Bennett, 2010; Malafouris, 2013). Political theorist Jane Bennett (2004; 2010: 5) argues that things are vital and embed attentiveness and energy that enable them to affect human lives. This approach contests attributing an instrumental role to the material that fixes its qualities. Material agency discussion as a part of creative making has elaborated this thinking by removing the makers from the centre and instead tackling the material's role. For instance, art theorist and artist Barbara Bolt (2013: 6) argues that through the agency of the material, art making becomes a collaborative practice of human and material. According to Bolt (2007: 3), although artists start with intentions, art works are co-emerged by the artist's mastery and material thinking. Similarly, Ingold (2010b: 93) contests the separation of form and material and examines *What does it mean to make things?* According to Ingold, (2010a: 10), the artist's role is to follow the flow and forces of the material to reach the form rather than sticking with the preconceived idea.

This co-emergence typically occurs through material's transformations and the maker's reactions to them. Psychologist Vlad Glăveanu (2014: 56) argues that the material resistances encourage the maker to respond differently in a way that advances creativity and aesthetic qualities. Craft researcher Glenn Adamson (2013) describes this situation as thinking through making, while sociologist Richard Sennett (2013: 167) identifies this process as a dialogue between the maker and the material that creates a co-ordination between the mind and the hand. I believe, this co-ordination enables an instant action-reaction relationship that occurs while making. Accordingly, as the material transformations affect the making process, designing and making couple and happen concurrently. Textile researcher Nithikul Nimkulrat (2010: 65) perceives this as the *materialness*, which refers to thinking through materials. She argues that the materialness of craft making is rooted in the material's effects on the generation of form, content,

context, and time within the craft production (ibid.). Correspondingly, the co-emergence of the artwork happens through thinking with the material while making.

Similarly, this exposition removes the focus from the human experience and human-centred thinking by employing the concept of material agency as a framework. Accordingly, this project perceives agency as the material's capacity to respond to situations in various ways under various conditions that emerge from the interacting elements. In this study, similar to the suggestion by feminist theorist Karen Barad (2003: 809), agency is not perceived as a given or an attribution, but rather as situated forces of things (See also Knappett & Malfouris: 2008, xii). Through enactments between the forces of things, Barad (2003: 822-823) argues that the world *becomes into being*, and therefore, these enactments are embedded into the humans and nonhumans.



Figure 5: Disentangled wool.



Figure 6: Disentangled wool in detail.

The emergence of artefact is also a continuous becoming that is affected by the material environment, the material, and immaterial entities. Ingold (2013: 73) perceives making as combining the forces of the material constraints, cognitive intellection and mechanical execution. Therefore, in the becoming of the world and emergence of the design, various interactions gain importance. To understand the role of these interactions, archaeologists Lambros Malfouris (2014: 143) argues for “shifting our attention away from the sphere of isolated and fixed categories [...] to the sphere of the fluid and relational transactions between people and things”. Accordingly, a holistic examination that involves various agents that emerge from the environment and process can illustrate how the material affect making.

Therefore, this study examines how one can work with the materiality of felting, with the focus on how wool, the only material of felting, can affect the designing of artefacts. By changing the working environment, this study follows material behaviour under various conditions and its connections to the agency of the material. In the projects, starting the practice with a preconceived idea is not challenged but designers are encouraged to be flexible with their ideas by moving away from the designer-centric way of thinking. Accordingly, this study examines the individual's designing process, the final artefact, and the idea generation that is inspired by the material interaction as a whole. The experiments discuss how material agency has catalysed making and designing. Next, I will discuss how material interactions were studied.

## Using Self-Experiences to Study Felting

Perceiving the material as an active participant in making triggers a discussion about the possible ways of collaborating with this participant. For instance, design historian Dennis Doordan (2003: 5) proposes three stages for working with materials: generation of the raw material, designing of an artefact, and user experience. Design engineer Elvin Karana and her colleagues (2015) focused on the stages of designing and experiencing an artefact and proposed the *material-driven design method* for designers to generate products in accordance with material qualities. When an underexplored material is the point of departure, the material-driven design method suggests starting with exploring the material behaviour and designing objects that utilise material qualities for a better user experience. From a non-human-centred understanding, designer and researcher Neri Oxman (2010) proposes the notion of *material-based design* as a method for overcoming the separation between form, structure, and material by positioning nature as the reference point rather than the human experience. Following a practice-led methodology, Nimkulrat (2012) examined the expressive qualities of material through her own practice. Her research positioned the material in the centre to examine how the material affects the maker's artistic intelligence and the perception of the viewer (ibid.: 3).

This study also positions the material as a reference point and conducts a holistic examination of it in various situations. Therefore, this study examines both the process of making and the artefacts. To genuinely understand the emergence of the artefacts and how designing and making happen, self-experiences were employed. These experiences enabled the generation of first-hand knowledge about the process of making. Investigating a certain issue through utilising one's own experience that emerges from engaging with the world is referred to as practice-led research. Using creative elements in research enables the examination of personal reasoning during making by creating a subjective and objective understanding as it combines the role of maker and researcher (McNiff, 2008).

The subjective part of practice-led research typically arises from the maker's reflections. Social scientist Donald Schön (1991) argues that two types of reflection emerge while making: reflection-in-action and reflection-on-action. According to Schön, while making, practitioners simultaneously reflect on their practice and decide on their next actions, this is reflection-in-action. Once the practice is completed the practitioner reflects on her experience to evaluate herself, this is reflection-on-action (See also Mäkelä & Nimkulrat, 2018). Through this reflective and reflexive loop intuitions continuously transform and reframe the research questions (Agger-Eriksen & Bang, 2013). Therefore, in practice-led research, although the research starts with a defined purpose, it is also open to reinterpretations (Sullivan 2009: 48-49). Decisions can be a combination of intuitions emerging from the agency of the external factors and intentionality of the maker (Mäkelä, 2016). To understand how these decisions are made, the practitioner-researcher examines her reflective documentation.

Accordingly, in this study the main documentation source were the bodily experiences and the reflective notes emerging from them. As sociologist Erin O'Connor (2017) proposes, *handwork* can become an embedded, enacted and sensory ethnography and can enable the examination of the role of the tools, materials and materiality of the workspace simultaneously. O'Connor argues that handwork enables observation of the becoming of the artefact through the creation of inter- and intra-actions of bodies and materials that generate the meaning of the making (ibid.: 227). In this study, my own experience of making felt and the bodily work provided a detailed account of experiencing the material engagement. After each practice session, notes, mostly emerging from the bodily experiences, were written down. Accordingly, the ordinary moments became crucial, and the reflective diary and visual documentation gained greater importance. The reflective diary notes included the ideas and tactile feelings from the making process, which were then studied to understand how the material behaved and led the making process by affecting the experiences, reasonings, decisions.

The reflective notes typically began with reflecting on that day's work experience, then continued with elaborating ideas for the next session based on specific experiences (Figure 7-8). These reflective diary notes had two purposes: firstly, documentation of the making of artefacts that reflected on the experiences that emerged while making and, secondly, documentation on the making of artefacts that suggested actions for the next making session (Mäkelä & Nimkulrat, 2018). Accordingly, some new design ideas were applied immediately while some became motives for the next sessions. The content of the reflective writings involved descriptions of the steps of making, reviews of the decisions about design to gain a better understanding and explorations of the reasoning behind those decisions to better understand the self (Kember et.al. 2008, Evans & Meloney 1998, Castleberry et.al. 2016).



Figure 7-8: The working diary with sketches and the work environment. A part of the sketch from the working diary became a pattern for the next project.

Aside from the reflective working diary, familiarising myself with the works of other creative makers has enriched my own creative aesthetics. A significant inspiration for my designer identity for several years has been American textile artist Sheila Hicks and her works with fibres. Her fibre creations point at long-standing traditional techniques while destroying traditional aesthetics. Her simplistic re-interpretations, especially her woven pieces, such as *Papillon*, deconstruct the loom structures and hack the local techniques of weaving (Own Website, 2018, see also Shattuck, 2006). Dutch artist and textile

designer Claudy Jongstra is another creative inspiration who mainly uses wool to create surfaces that look unfinished. She describes her works as “[...] microscopic views of the plants and animals from which their materials are sourced” (Own website, 2018). Her works have encouraged me to pursue my interests in exploring the nature of wool since they specifically resemble the feeling of rawness and wildness of nature. The influence of these two creative makers has been implicit to my practice, and reviewing these textile works contributed to the becoming of a felt maker. Next, I will present the project and discuss effect of the material’s qualities by referring to the photos, sketches, videos, and diary notes.

### **Observing Wool and Transformations in Felting**

Felting utilises the wool’s qualities, namely the flexibility and elasticity of the fibres, to create unified surfaces (Burkett, 1979: 1). The basic procedures and techniques of the practice, based on entangling the wool fibres through pressure, warmth, and movement, have created a simplistic and genuine identity for itself. Although felt is considered to be the earliest textile (Burkett, 1979: 8), the making procedures have remained essentially the same throughout the millennia. This is mostly because the practice is developed based on material qualities and making is rooted in material-based thinking. In other words, the *materialness* (Nimkulrat, 2010) of the practice enabled the sustaining of similar techniques of making. Therefore, since the practice of felting is deeply rooted in the material structure, namely fibres, it provides an accurate sample to examine material-based thinking. Felt is also an inspirational textile due to the rawness and non-structured entangled nature of wool, which resembles the woolfell of the sheep. Philosopher Gilles Deleuze and psychotherapist Félix Guattari (1987: 475-476) perceive it as an anti-textile:

“it is in principle infinite, open, and unlimited in every direction; it has neither top nor bottom nor centre; it does not assign fixed and mobile elements but rather distributes a continuous variation”

Accordingly, due to these features, felting was selected as the context of this study. As my knowledge of felting was initially limited, the project began at the studio with wet felting, following the *rules* without question. The wool fibres were entangled with hand pressure, water and soap. In wet felting, the hands usually have three major movements: the first is based on creating a cylindrical form with wool and rolling it back and forth, the second is based on the circular movement of hands on a flat wool surface, and the third is based on rubbing and squeezing wool to generate a three-dimensional form (Figure 9).



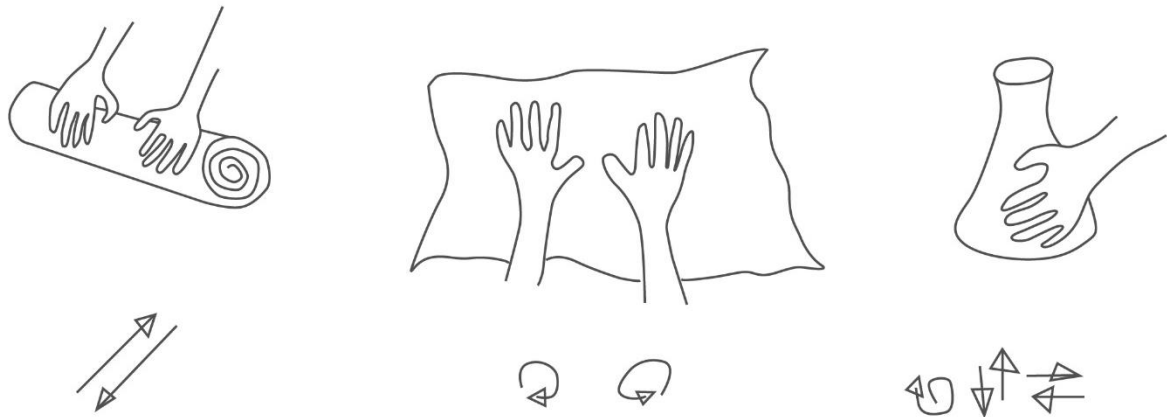


Figure 9: The three movements of the hands in wet felting: rolling the wool, circular movements, and rubbing. The arrows illustrate the direction of the hand movements. Illustration by the author.

While the hands are moving, the positions and forms of the wool fibres change according to each hand movement and a new composition is created every time. The material is consistently re-formed and new compositions of wool fibres are continuously generated. Before the wool is completely felted, the individual wool fibres are still visible, and the maker can follow the changes in their positions. As the making continues, the wool fibres lose their individual existence and create a unified surface.

Observing the unstructured entanglements of the fibres proposed a new perspective for the practice: the maker does not create a new fibre entanglement but rather she manipulates the natural entanglement together with the wool itself. This thinking challenged the role of the decision maker and promoted the positioning of the material as a participant within the process of making rather than seeing it as a passive instrument for the practice. Accordingly, the designer-led practice became a designer- and material-led one. Therefore, it became almost an ethical concern to visit the material in its own environment rather than keeping it in the design studio. Accordingly, a field trip to the Turkish countryside was organised to observe wool in its own natural environment (Figure 9). At this stage, agentic power of the environment became observable (Mäkelä, 2016).



Figure 9: The new studio.



Figure 10: Sheep in their natural environment.

The studies in the natural environment began with observations on sheep, the producer of wool. Since sheep mostly moves as a group and enjoys touching each other, wool fibres start entangling when still a part of the sheep woolfell (Figure 10). After this observation, wool was collected from the observation site and worked with to understand the behaviour of the wool fibres under various conditions. To examine elasticity and the kinship among the fibres, pressure was applied. When wool is pressed into a defined form and released after a while, it preserves the shape it earns from the form (Figure 11). When the pressure is caused by water, the kinship between the fibres becomes stronger in an orderly way since small movements of water create more linear entanglements in various directions (Figure 12). In this type of pressure, the air between the fibres is removed and as a result the fibres lie closer to each other. After being washed, although one part of the fibres preserves the entangled situation, the other part has separated fibres (Figure 13). In this form, the movement of the air, or wind, becomes another element that affects the kinship and volume of the wool fibres.



*Figure 11: Wool after being taken out of a plastic bag. Figure 12: Wool under water. Figure 13: Wool after being washed and shaped by air.*

These observations provided an experiential understanding for the flexibility and entangled-ness of the material and illustrated wool's temporal emergence in its natural environment. To further experience these features in relation to bodily experiences, an ancient hand-operated carding tool was employed (Figure 14). Carding is a way of brushing wool: the wool lumps are passed through the metal needles that are located on a flat surface. Then each hand pulls the wool lump in opposite directions so that the fibres are lined up, disentangled and grouped together in an orderly way (Figure 15).



Figure 15: While working, the hands must follow the fibre directions. Figure 14: The hand-operated carding tool. The wool lump on the left is carded while that on the right is un-carded.

In the process of carding, the hands should follow the direction of the individual fibres to generate straight lines. Otherwise, if the maker forces the wool to follow a certain movement, carding becomes challenging and the maker has difficulty in working since the direction of the fibres and hand movements contradict each other (Figure 15). This struggle became another example of the responsiveness and performativity of the material. After this experiment, the study continued at the studio by using wool fibres to design patterns for flat felts and forms for three-dimensional artefacts.

### Pattern designs with wool

After learning more about the wool, ways to include the material in the design process were examined:

“Maybe I can make the pattern of the tapestry with the inspiration from the natural shapes of the wool fibres ... For instance, I can take photos of these [lumps] and then use the outlines in the drawings.” (From the working diary, 01.06.2017). (Figure 16).

As the study was initiated with the quick movements and the entanglements of the wool fibres, the visual aesthetics of wool became a resource. Considering that in flat felting the pattern is usually the main design element, the project employed wool to generate patterns. In this project, only undyed natural colours were used to preserve the idea of wool as the visual resource. The experimentations were flat and in various sizes with no utilitarian purposes.

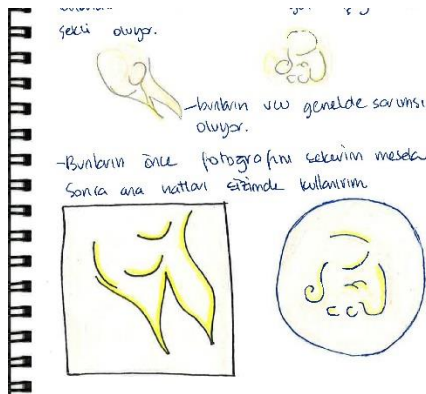


Figure 16: A snapshot from the working diary that illustrates thinking about the pattern making from the wool lumps.

First, the autogenous wool lumps were photographed with a camera (Figure 17). Then, the main lines of the wool lump were sketched in the working diary. The sketches were done quickly, not paying attention to all the individual fibres but only to the main shapes. The quick scribbles created patterns to be applied on the felt. The results were flat artefacts with line-shaped patterns (Figure 18).



*Figure 17: Left: Photograph of a wool lump. Right: Pattern derived from the wool lump.*



*Figure 18: The artefact designed with the wool.*

Although the results were successful, since the main aim of the project was to follow the material to design artefacts, bringing the three-dimensionality of the wool lumps to the practice became a concern:

“Since I talk about the material all the time, I am thinking that I should be heading towards the material [for design ideas]. Actually, wool remains three-dimensional in nature. The air is also

a part of the wool. Perhaps my experiments should also move from [being] two-dimensional to three-dimensional.” (From the research diary, 10.10.2017).

Therefore, pattern making was combined with creating layers of felt to perform the feeling of three-dimensionality.

### Three-dimensional designs with wool:

“I value felt’s being three-dimensional a lot ... I should work more in the third dimension. Because only then it would be compatible with wool. In fact, the project can progress in two ways: Pattern design inspired by the *individual* movements of the wool fibres. Form design inspired by the *collective* movements of the wool fibres.” (From the working diary, 09.02.2018)

To create layers, the fibres were manipulated in a way that would prevent the creation of entanglements in certain parts of the surface. The patterns were generated in the same way as before by photographing a wool lump and then sketching its lines, although, in this experiment patterns were employed to generate layers. When making began, first, wool was spread on a surface, and the dark wool, that was collected from the dark sheep, was placed in the form of a pattern that was generated from the wool lump. This part was covered with a plastic sheet that was in the same shape as the pattern. Then, the second layer of wool was placed, covering the plastic sheet, which was later felted. When felting was completed, the part where the plastic sheet was placed was cut with scissors to bring the pattern out (Figure 19). Accordingly, the togetherness and separation of the wool fibres were emphasised by creating the feeling of layers.



Figure 19: The two layers of felting. The inner layer was uncovered by cutting the outer layer.

The final artefact was successful in terms of generating both entangled and unentangled parts in one piece, similar to wool lumps. In this example, as with several others that were made, the aesthetics of the final piece were still closer to a human design than a naturally-occurring material design, due to the defined separation of colours and designed transition of layers in the form of patterns. To overcome this artificiality, the design was then changed to intuitively generated lines without prior photographing or

sketching. Only undyed ivory wool was used. Making continued by following similar steps to the prior process, but the number of layers was increased to sharpen the feeling of depth in the final piece. This time, three layers of plastic sheets were utilised to create four layers of wool. The final piece was more satisfactory than the previous one in terms of the volume, three-dimensionality and the emergence of the layers from one surface (Figures 20 & 21).



*Figure 20: Four layers bring out the three-dimensionality of wool.*



*Figure 21: Details of the artefact.*

This process is an example of co-design between the maker and the material in which the inspirations, intentions, and final design were entangled and emerged through the material qualities and the designer's experiences.

### **Designing and Making with Materials**

“[...] the part with the three layers of plastic sheet is naturally thicker than the other parts. This thickness may affect the rolling. Trying an even thicker one may become problematic in the next experiment [...] As I cut each layer, I realised that some parts were not fully felted. Then I felted those parts a little further [...] In fact, I half-felted. I could have felted more, but I wanted to make it chubby and give the feeling of unfinished-ness and a little wildness. I completely like it”. (From the working diary, 10.07.2018.)

The reflective diary note above confirms that at this stage, I became *competent* in felting by gaining the ability to generate and follow a plan. Also, being emotionally involved in the practice enabled me to feel the joy of making (Dreyfus, 2004: 178). At this stage, by examining the material's responsiveness and its effects on the development of the experiential knowledge, how the material behaves started sinking in and I began becoming a part of the material.

In this study, the observations on wool outside the studio enabled a genuine understanding of the material. Being in the material's natural environment in a non-felting context provided an opportunity to observe how the material emerges without any human effect. Once the vitality of the material was understood, the maker could correspond with the transformations of the material and the emergence of the artefacts. When making was conducted at the studio again, the agencies of the material and the maker emerged together (Pickering 1993: 577). Through this togetherness the material became a reference point, and the patterns were no longer preconceived ideas, but as Bolt (2007) and Ingold (2010b) argue, they were co-emerged while making with the material. The co-emergence was also affected by the materiality of the entanglement that involves the maker, wool, making space, tools, notebooks, photos, and sketches. As a result, making became a more holistic experience as the participants, namely the maker and the wool, and the processes, namely designing and making, became interconnected.

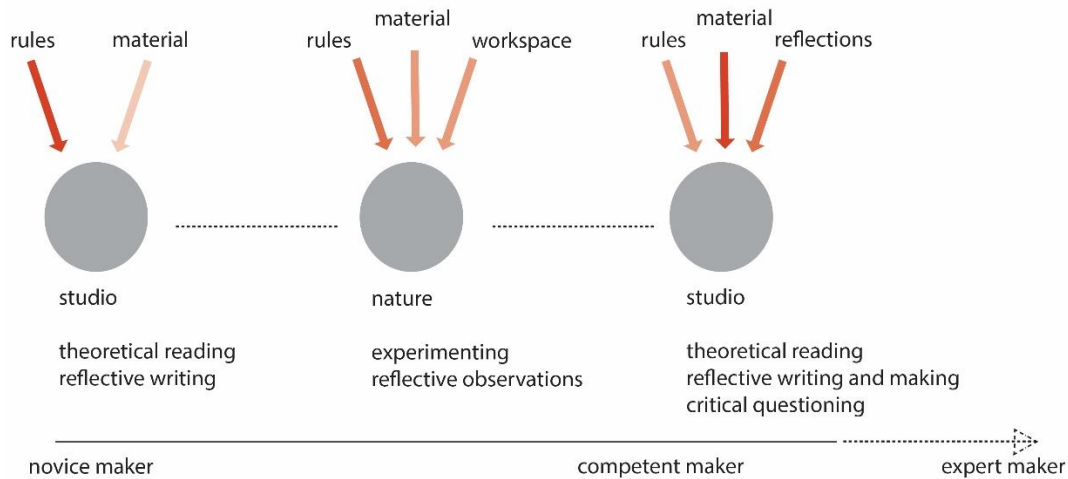


Figure 22: Diagram illustrating the change of the reference points for felting in relation to time, gained experience, and workspace. The tones of the arrows emphasize the strength of the element and its effect, lighter tones meaning less influence while darker ones indicate more.

During this process, the main resource for the practice shifted from the rules to the material (Figure 22). Initially, with limited knowledge, the rules were leading the making process. After the material began affecting felting more dramatically, the working environment was changed. At this stage, the material gained greater importance in the making. Finally, when felting took place at the studio again, the main effect on the practice was material, which was supplemented by the reflections. At this stage, the rules still composed a meaningful reference point; however, by assigning the lead to the material, the rules were contextualised through experiences.

During the project, self-reflections were significant elements for studying how the material used becomes a catalyst in making. These reflections emerged from observing the material in two environments: the design studio and in its natural environment. Observing the material outside the studio space enabled an understanding of the context of the practice; in a sense, as Glăveanu (2012: 202) argues, it provided a place for re-discovering the origins of the practice to understand the reasons for employing that specific material for that specific action and practice. In this case, this understanding enabled going beyond the given knowledge and re-discover the material's significant features to contextualise the making techniques.

In this study, employing the material features to gain knowledge and inspiration has provided a new aesthetic for the practice. When the practice took place in the studio again, the material's behaviour was worked with to generate patterns and forms. In the experimentation, the patterns were derived from the same ecology as the practice, that is from wool. Therefore, the patterns were not solely defined by humans, similar to the fibre entanglements. By going to the material's environment, the maker can join in the becoming of the material and the world through observing the material's own being without any input from the maker. Understanding material's becoming and its active affection propose many possible



interactions by approaching the qualities and affordances of the material from different angles, in different spaces and time.

### **Conclusions:**

In this exposition, I have presented how the material informed and contributed to the explorative creative making and designing processes. With the studies in felt making, the agentic power of the material is examined based on the idea that the material is one of the subjects of the practice rather than a static instrument with which the maker expresses herself. By introducing a series of experiments with the material before and during making, this exposition examines interaction with the material at different stages to generate designs that employ features of the materials. In a sense, by making the interaction between the maker and the material more explicit, the references for making are also developed from the material. Therefore, the final piece has a significant connection to the material.

By corresponding to its agency, designers can find new ways of coupling with the material, intended objects, and themselves. Accordingly, the designer can expand the possible ways of making and thinking from a multi-dimensional ecology of design that includes many affecting elements that can broaden the understanding of making and designing. Studying material agency in various environments can become a way for understanding a practice or enriching experiential knowledge. These experiments suggest that examining the material before the making process and outside the usual making environment provides an opportunity to learn about the material's qualities at an early stage in a way that is embedded in experience. The project exemplifies the continuous *becomings* by presenting the change in aesthetics and thinking throughout the project. Thus, this exposition illustrates that material agency becomes a catalyst in conceptualising the practice, developing one's experiential knowledge, and connecting design with the material.

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