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TANGLED BECOMINGS IN MATERIALITIES OF FELT PRACTICE(S)

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ABSTRACT

In this exploratory paper, we discuss how different scales of production can affect relationships between humans and nonhumans. This discussion is carried out through the exploration of three scales of felting: hand-felting with manual tools, felting with semi-industrial tools at small-scale studios, and felting with industrial automated machines. Despite the large spectrum from hand production to industrial production and the dramatic change in the actual practices involved, the fundamentals of felting remain similar, creating a compound surface by pressing and unifying fibres. By examining these changes, this paper explores the fluidity and changing meanings of practices and their impact on building new relationships among humans and nonhumans. The examination reveals that as the scale grows the distance between the maker and the material also grows, affecting the maker-material relationship significantly. By studying different relationships through the lens of scale, we further understand the becoming of human-nonhuman relationships in craft practices.

INTRODUCTION

Felting is an ancient craft often practised with sheep wool to create nonwoven textile surfaces. Wool has a tendency to entangle: even when there is no human contact wool fibres can be felted via the forces of air, sheep oil, sheep sweat, and pressure. Thus, when collected, wool is usually already tangled. Although the

tangled wool can still be felted, often, to increase the efficiency of the process, makers un-tangle the fibres and put them in an orderly line before entangling the fibres once more, this time in the preferred size, firmness, and shape. At this stage, warmth, pressure, and soap can also be used as catalysers.

In recent years, following technological developments, felting procedures have been changing through the introduction of new machines and tools. The exploration of wool's ability to insulate sound and heat have led to a growth in the use of wool as a fundamental insulation material, both as part of construction (Raja, et.al., 2013) and as part of interior decoration (Kibbermann 2020). With these new tools, the scale of production has grown, and currently a felted artefact can be produced by hand at a small-scale craft studio as well as on an industrial mass production belt.

In this paper, we present three scales of felting, namely hand felting, semi-industrial felting, and automated felting. By discussing the similarities and differences between these scales, we present the vibrant materialities of felting that set the practice and its practitioners in a constant state of becoming. Materiality is often discussed through the haptic experiences of interacting with an artefact (Anusas and Ingold 2013), and in this paper we apply similar thinking to discuss the haptic experiences of the maker during the process of making as the practice's materiality. The material experiences of the maker during the process significantly shape the emergence of the practice and lead to it having various *becomings*. By looking into the materialities at different scales of felting, we reveal the becoming of the practice itself and how it affects different relationships.

The notion of *becoming* refers to a body's ability to affect and be affected (Deleuze and Guattari 1987), or to a state of constant flux as a body interacts (or intra-acts) with other bodies. Anthropologist Tim Ingold (2013, p. 28) proposes that materials are in constant becoming with their affective ability: they always change and make a change in their surroundings. Their becoming can be followed by observing the growth and transformations that they go through (ibid.). Here, becoming refers to constantly *becoming something else*

rather than *being something* static and fixed. Thus, becoming is being in an ongoing unplanned action with other elements in that particular situation (Barad, 2003, p. 803).

The notion of becoming is closely entwined with the idea that things and materials are active (in opposition to being stable). With their becomings, materials and things hold affects able to invite new perceptions and, in this way, enable the production of knowledge and practices (Valle Noronha, 2019). By being in constant movement, materials can always bring new perceptions.

The becomings of practices and materials maintain and exhibit their history while proposing various relations and futures. Building on the ideas of becoming and of active matter, the examinations on different scales of felting show how the material can generate active materialities of practices. In the next sections, we will first discuss materials and their active becomings, then we will present three scales of felting based on field notes. After these presentations, we will discuss the becoming of relations that emerge from various scales of felting in accordance with the material's origin and practice, various roles of humans and nonhumans, and the environmental connections.

ACTIVE MATERIALS AND MATERIALITIES

Materials, or from a larger view any nonhuman entity, hold embedded capacities that can make significant changes in their surroundings (Barad, 2003). However, Ingold (2007, p. 9; Anusas and Ingold 2013) argues that materials often disappear into the forms of objects and presents their materiality. This disappearance has the potential of instrumentalizing material properties and perceiving them as fixed entities while attributing all the activeness to human perception. Ingold, however, suggests emphasizing the growth and transformation that the material goes through to understand how we make sense of our actions and thinking together with materials.

When materials are perceived as active, their role in shaping the everyday experiences and actions of humans can be recognized (Pickering, 2010). This effect on actions can also extend to shaping the ways of thinking and perceiving the world. Therefore, observing the performative capacities of nonhumans can lay down the causalities between actions of humans and materials (Pickering, 2010). This can then show how relationships are also in constant becoming in a dialogue-like way. These relationships develop naturally from situations by paying attention to these changes, and thinking with them (Puig de la Bellacasa, 2012, p. 197) as each development shapes those following.

For instance, wool's becoming can be observed in its own environment. The proteins in wool fibres absorb UV light while changing its white-ivory colour to

yellow as a result of exposure to weather related conditions, such as sunlight, air, and water (Millington, 2006). The capacity to absorb sunlight also gives wool the ability to protect its underlayers (*ibid.*). The physical transformation from single fibres to a compound surface, with or without human agency, is another physical becoming of wool. The togetherness of these two abilities can affect the becoming of wool into a filter, building a relationship with humans to protect them.

By studying various ways of thinking with materials to make felt, we can reveal new forms of relations. Following the change in a practice in relation to its scale can reveal how the thinking behind the practice and material perception has been evolving and growing. This can demonstrate how a certain material or materiality of a certain practice generates new relationships among humans and nonhumans. We have an ever-changing relationship with our surroundings that is constantly affected by the different conditions. Understanding the changing perceptions of practices can present how engaging with materials on various scales can bring new actions and conceptualizations for humans. Next, we will present three scales of felting.

THREE SCALES OF FELTING

To discuss the materiality of felting and how it shapes relationship-building, we examined three types of felting, mainly in relation to their production scale. The first, hand-felting, is examined based on the first author's personal experiences, the second, semi-industrial felting, is examined based on field notes from observations at an expert maker's studio in Yalvaç, Turkey, and the discussion third, on industrial scale felting, is examined based on interview notes with the chief designer and founder of a felting company in Istanbul, Turkey.

While examining these three types of field notes, the main aim was to reveal the significant differences among the type of the material, tools, size of outcomes, and required time. Although each scale of felting embeds a complex set of relationships and practices, in this section we overview the field with reference to the material, tools, and working environment in order to present the main frames of each practice type.

FELTING BY HAND

For felting by hand, we examined the first author's making process. In this way of felting, wool was purchased online which was already cleaned and carded to be used in felting. Alternatively, the maker could use the manual carding tool to arrange the fibres in an organized manner.

We explored two types of hand-felting for this study: wet felting and needle felting. In wet felting, the main

action of the maker is to rub the wool fibres until they are unified. While rubbing, the hot water stretches the wool molecules to entangle them, and the soap makes this process quicker. Having bubble wrap also shortens the time since each bubble creates additional movement for the fibres. Thus, in wet hand-felting, soap, warm water, and plastic bubble wrap can be used to catalyse the process of entangling wool fibres.

In needle felting, the maker can utilize a specific type of a needle that has slits on the side. By poking the needle, or in other words, inserting the needle into the wool lump several times, knots are created, and fibres are entangled. With needle felting, the maker is able to create precise patterns or delicate three-dimensional shapes with the help of soft moulds, such as sponges.

While making felt by hand, the maker can work individually at a small-scale studio. For needle felting, the workspace can be more flexible since there are no specific requirements such as working with water. Since the production is entirely handmade, the outcomes are often one-of-a-kind artefacts. Besides developing the design idea, the entire process of making a 0.75 m² mat with 2 mm thickness can take more than a workday (approximately 10 hours). Needle felting would require several days.

FELTING WITH SEMI-INDUSTRIAL MACHINES

For felting with semi-industrial machines, we base the discussion on the observations we made at an expert maker's studio. Gencer collects wool from sheep breeders in large amounts around three hundred tons per year. He selects the thin fibres since they are softer and cards them via a machine. The preparation process requires additional practices and only after these steps are completed does the actual practice of felting begin.

At this stage, the artefacts are drafted by laying the wool in the desired size and pattern and turned into felt by using a felting machine that applies pressure to the artefact from multiple directions. This machine rotates the rolled wool piece around itself while applying pressure from above and the sides. These forces significantly reduce the production time while enabling the making of thick pieces thanks to machine power. The making of large sizes allows spending a longer time with the wool while laying the designs. This long process positively affects the making since the slowness provides time to reflect on being with and thinking with the wool.

Despite the use of machines or making artefacts that are large in size, the practice of felting still requires a demanding process of hand work, both before the use of the machines when the patterns are laid out and after the machine work when the shape of the felt is finalized via working on the symmetry of the sides or curving the sharp corners. Therefore, the scale of production, in

terms of number, is still limited, yet, the number of people this process involves is larger than hand-production since it includes collaboration between various makers and practitioners.

Since the machines in the studio visited enable the production of large sizes, various projects could be developed by four felt makers working collaboratively. This possibility allowed the production of a wide array of products, ranging from garments to insulation panels, with traces of uniqueness. In addition to developing the design idea, the entire process of making a yoga mat that is a 1.12 m² yoga mat of 5mm thickness can take about half of a workday (approximately 4 hours) with the machine.

FELTING WITH INDUSTRIAL MACHINES

For felting at the industrial scale, we interviewed the chief designer and co-founder of a felting company. This company often designs and produces artefacts, such as separators for common areas or interior surfaces for acoustic experiences. At the industrial scale, felting is no longer limited to organic materials like wool. Rather, it relies on fibres that can be compounded, such as polyester, cotton, acrylic, polypropylene and polyamide (Küçük & Korkmaz, 2012, p. 2045). In fact, this company prioritizes PET fibres for sustainability reasons. As a result of an extensive research and development process, the PET fibres generated wool-like features in terms of appearance and tactility as well as material qualities, such as flame resistance. Working with plastic-based materials also increases acoustic properties while improving the ability to make three-dimensional artefacts.

At this company, products are designed to be used for their acoustic and insulation purposes. Production is automated to a large degree and operated via computer-aided tools both for design processes and the actual production. The role of humans is often to develop the design idea. The designers experience the tactility of various materials before they begin their design processes while selecting their material range. However, since they seldom change their material range, their contact with the material is usually limited to testing the prototypes.

At the industrial scale, naturally, the production size is large and the artefacts can be mass produced, as opposed to handmade felts, which are produced in limited numbers. Also, from a market point of view, the industrial practices also bring standardized quality to the product.

FELTING IN MANY WAYS

As the aforementioned descriptions show, despite the dramatic changes among the scales, the practice remains felting. This perception proposes that felting has become a practice that is independent of the material

type and refers to the movements of various fibre-based materials that have the capacity to create a compound surface through different tools and methods. As previously observed, such flexibility supports constant transformations and becomings (Figure 1).

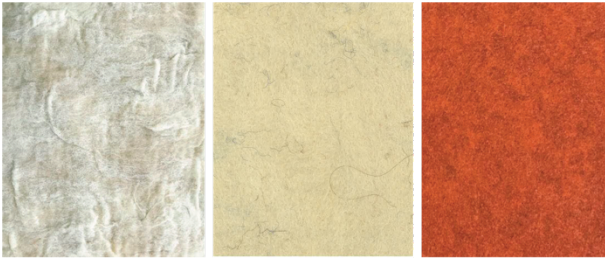


Figure 1: Various felt surfaces. From left to right: wet felting by hand, machine felting, automated felting.

Photos: Aktaş, 2020.

These transformations in the practice and material also allow the emergence of new relationships between materials, practices, and the other entities involved. As the scale of production grows, the relationship between human and the nonhuman develops in a myriad of ways. This dynamism confirms the fluidity of practices in constant change in accordance with situated engagements with materials.

Although we reviewed three scales with reference to the production process, the idea of scale covers growth in the general sense. With the growth in production, the scale of the practice's impact area also grows. With growing scale, the distance from the material's origins, the actions of the humans and nonhumans, and the impact upon the environment are significantly affected (Figure 2).

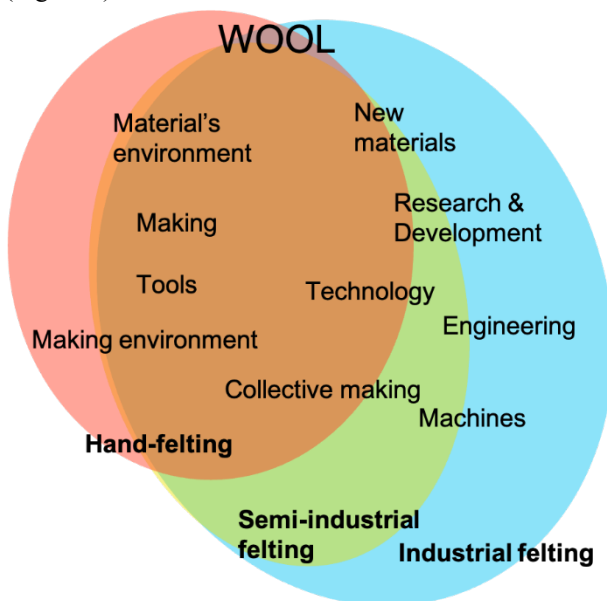


Figure 2: The elements and engagements of felting in three scales. Illustration: Aktaş, 2021.

MATERIAL'S ORIGIN AND THE PRACTICE

Although industrial developments improve human lives by increasing production efficiency and availability, they can also distance the practices from their material roots. When the slowness and bodily participation of hand-making is removed from the process, practitioners lose contact with the origins of the practice in a manner similar to how they distance themselves from the material of the object and focus on how they experience the materiality of it, as proposed by Ingold (2007). Engaging with hand felting that is made with sheep wool can surface its history of being part of a living organism, along with its smell, texture, and bio-waste. Crafting artefacts by hand builds embodied relationships with materials and can directly impact upon how we make sense of the world (Groth, 2017). Making with tools and machines can affect how we make sense of the world in different ways.

At the industrial level, material engagement happens through a different lens for the practitioner: either when they are selecting the right material or after the material is shaped into an artefact. For the practitioner, this eliminates the material engagement from the process of form-giving. This distance builds a particular type of relationship, in which relating to the material might be challenging. This type of making also brings a different type of embodied knowing: the designers enhance their digital literacy to think with computer software when developing design ideas. Therefore, the materiality of the practice becomes more digital for practitioners working at the industrial scale.

The scale of production, the practice, and the material reciprocally affect each other's becoming. With the growth in production size, new needs for the process of making and material qualities might emerge and accordingly can change the meaning of the material and the practice completely. The industrial felts being PET fibres moulded into forms is an example of these new meanings.

CHANGING ACTIONS AND CONNECTIONS

In accordance with the developments in knowledge and technology, new relationships are formed. When nonhumans are assigned to realize parts of human agencies, such as the actual making of felt, the process begins diverging since nonhumans can go beyond human capacities. For instance, in the felting example, felting is no longer limited to wool and the outcomes' physical properties of sound and heat insulation can be played with.

Therefore, on the one hand, the abilities of nonhumans, like plastic-based materials and machines, increase human capacities in an empowering way. The active materials bring new ways of interacting with them (Pickering, 2010), and similarly with the becoming of

enhanced material futures, new engagements highlight the becoming of humans as they might start changing their actions.

On the other hand, with the change in scale, being distant from the origins of the material can potentially shape the relationship with its ecologies. Since humans develop their thinking within their environment (Malafouris, 2013), the distance from material's origins can affect the emergence of relating to the environment. The industrial felting can overshadow the activeness of the material since it provides a limited set of actions to the practitioners to explore while making.

Also, naturally, another significant impact of the scale is based on the footprint that the industry generates. The production scale brings growth in other industries such as transportation and energy. This brings a new responsibility for the designers to be cautious about the results of their practices, and even encourage them to prioritize thinking with materials rather than instrumentalizing them with no attention to their activeness.

BECOMINGS OF PRACTICES AND RELATIONS

Practices, materials, tools and us, we humans, are in constant transformation. These changes often evolve in interwoven and reciprocal ways: through alterations in materials or practices the other elements also change.

Previously, design researcher Mike Anusas and Ingold (2013, p. 58) proposed that objects, especially if produced industrially, contribute to environmental alienation. This exploratory paper contributes to this discussion by exploring the materiality of practices and their emergent becomings on different scales, such as that of hand-making and industrial production.

We propose that the scale of felting affects human-nonhuman relationships in ways that distance the practice from its material roots, and this brings new material experiences for the practitioners in their processes. With the large scale of production, the tools also change and gain greater roles in the process by going beyond human capacities. Although this may create a positive co-existence of humans and nonhumans, it can also cause over-empowering humans to dominate the process of making by developing methods of controlling the material, such as by increasing its abilities to absorb sound or insulate heat without recognizing the impact of their practices. Thus, we believe that it is elemental for makers and practitioners to remain in contact with the material and become tangled with them, rather than controlling the materiality of the process, to build sustainable relationships with and through their practices, materials and the environment.

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